

The IRON AGE

April 17, 1958

A Chilton Publication

The National Metalworking Weekly



Howard T. Hovde

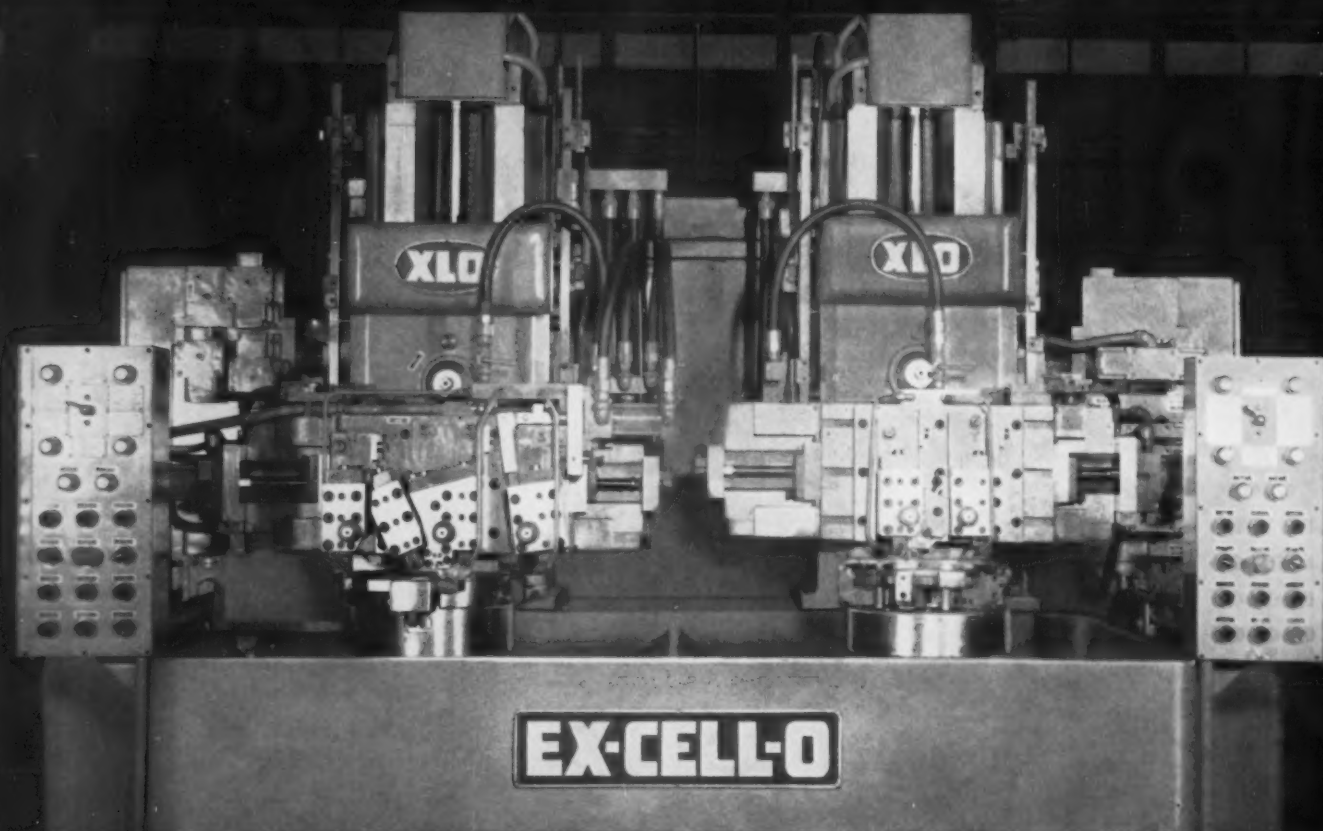
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Business**

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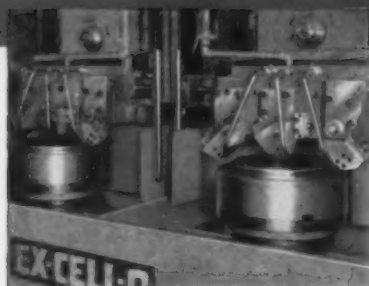
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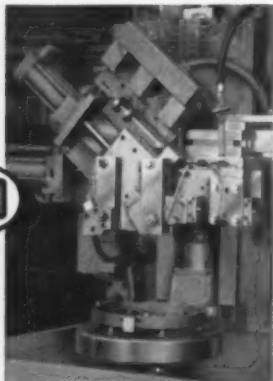
Twin spindles Double work capacity



This arrangement uses a magnetic chuck to hold an automotive part for processing.



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PRECISION



The Style 432 machine as fitted with an auxiliary slide for angular cuts.

A single operator on this Ex-Cell-O Vertical can precision turn, bore, face, groove and chamfer two identical or completely different work-pieces simultaneously. All operations may be performed singly or in combination, and don't overlook the loading ease and tool accessibility of this vertical boring machine.

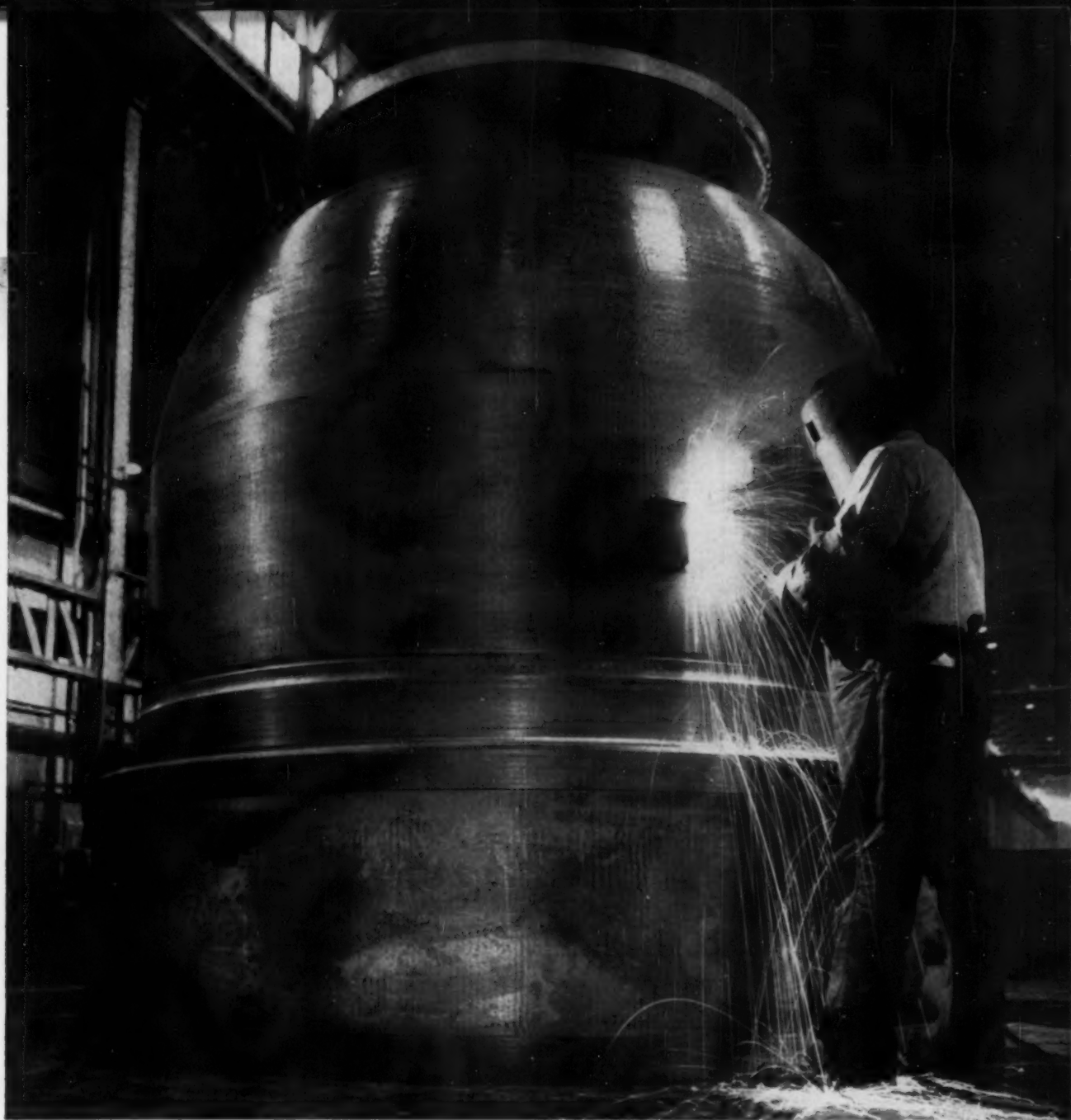
Ex-Cell-O engineers have cut maintenance time to barest minimum by locating service parts within easy reach. Yet overall design of this machine is clean and compact.

No doubt you are interested in increasing your production output. Call your nearby Ex-Cell-O representative for a conference today. His suggestions cost you nothing—and may save you a considerable sum. Or get in touch with Ex-Cell-O in Detroit directly. We would appreciate the opportunity of putting our years of specialized experience in the machine tool field at your disposal.

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57-20

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BIG, but what is it?

Well, first of all, it's a forging, one of the largest of its kind that Bethlehem has ever made. But when you attempt to guess its purpose, you may be stumped, as others have been. It looks like a king-size bell, though of course it isn't that at all.

The husky forging is actually the top cylinder for a 6500-ton briquetting press. It had to be made with great care, and of just the right steel, for its job will be rugged. As you see it here, it stands 9 ft high and weighs just about 67 tons. Its maximum OD is 104 in.

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design. But please remember, the Bethlehem shops make *every* type of forging, large and small, for every commercial requirement. Some of these pieces weigh a hundred tons and more; others weigh less than a pound.

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convinced that hard selling can lead



the comeback. But most realists
hope that new models will help
pull the industry out of its present
slump. P. 63

BIG GUESSING GAME

Will Steel Prices Rise?—Despite
the recession in steel, the odds favor
a rise in prices this year. Here's a
"Do-It-Yourself" kit to help you
make up your own mind. P. 65

AVOID FALSE ECONOMY

Cost Cutting—In times of poor
business, the auditors tend to take
over. But it can also reach the point
of false economy. One of your
problems will be to prevent valuable
services from being cut back too
far. P. 71

SMALL CARS

Their Popularity Grows — Will
the Big Three automakers be forced

THE IRON AGE, April 17, 1958

Metalworking



BUSINESS UPTURN: Howard T. Hovde, vice president, The Econometrics Institute, sets down some of the key factors in spotting the business upturn. He also outlines some trends, based on Econometric forecasting. P. 73

into the small car field? Increasing foreign car sales have them worried. It's an open secret that Ford and Chevrolet have plans in the design stage. P. 78

SURPLUS TOOLS

A New Policy—Government officials are revising their surplus tool disposal program. Foreign nations will get fewer, U. S. schools will get more. P. 87

FEATURE ARTICLES

TAPE CONTROL

Boon to Milling—Besides slashing milling time to less than half, tape-controlled units trim tooling time, tool costs, and scrap to the bone. Aircraft and missile builders find the system adapts well to continuous production of close tolerance parts. The computer for the tape preparation system is a small digital unit. P. 103

SCRAP HANDLING

Coordination Counts—A radio network is just one of the up-to-date methods used at a scrap yard. By mechanizing each step in scrap processing the firm holds costs to a minimum. Many shears and flame cutters are used to prepare scrap for steel mill use. P. 106

ALIGNMENT METHODS

Precision Over Distance—In testing rocket sleds, supersonic speed magnifies the need for pre-

cision in laying track. It led to the development of special techniques to hold a few thousandths over a distance of miles. P. 108

STAINLESS CLAD PLATE

Look Beyond Cost—Economy isn't the only advantage in stainless clad steel. The material offers the ductility of carbon steel along with corrosion resistance and high thermal conductivity. P. 112

CAMERA SHOWS ACTION

In Burst at High Speeds—How does a part fail at 22,000 rpm? High-speed cameras can provide a permanent record of the brief but violent drama that takes place inside a spin-test pit. P. 116

MARKETS & PRICES

ALUMINUM MARKETS

Some New Ones Grow—Chemical and petroleum industries are turning more to aluminum. Among items sold are oil country pipe, drill rigs and platforms, tank and pressure vessels. P. 66

NEXT WEEK

NONFERROUS MACHINING

The Right Way—Nonferrous metals generally are easy to work with. But even an easy job can be done in a right, or a wrong, way. Next week's special report covers aluminum, magnesium, copper, and titanium. (Alcoa photo)

STRUCTURALS

On the Rise—An unexpected increase in new orders for structural steel is a welcome omen. In some cases, March tonnages rose as much as 5 pct over February. P. 68

MISSILEMAKING

Why Farwest Leads—West Coast will pace missile building for a long time, expert says. Only deliberate decentralization could bring any movement of plants out of the area. P. 85

IS THE WORST OVER?

Steel Market Bumps Along—More steel men are beginning to think their market has hit bottom. They believe the worst is over. But they look for a slow, painful comeback. P. 145

INDUSTRIAL SCALES

Sales Drive Underway—With orders off and backlogs declining, scalemakers are out to line up sales. They're urging customers to improve weighing equipment by updating and modernizing it. Drive may be paying dividends. P. 146





**"B&W's Mr. Tubes gives me the
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YOU can ENGINEER FOR PROFIT by keeping your piping costs as realistic as possible. Specifying and buying welding fittings and pipe, especially the alloys, can be pretty tricky. Admittedly, most alloy jobs are, inherently, both complex and expensive. Any error in judgment can throw costs way out of proportion. That's why it pays to call in B&W's Mr. Tubes. Put him on your planning team . . . he's the man that can help make your specifying decisions more certain.

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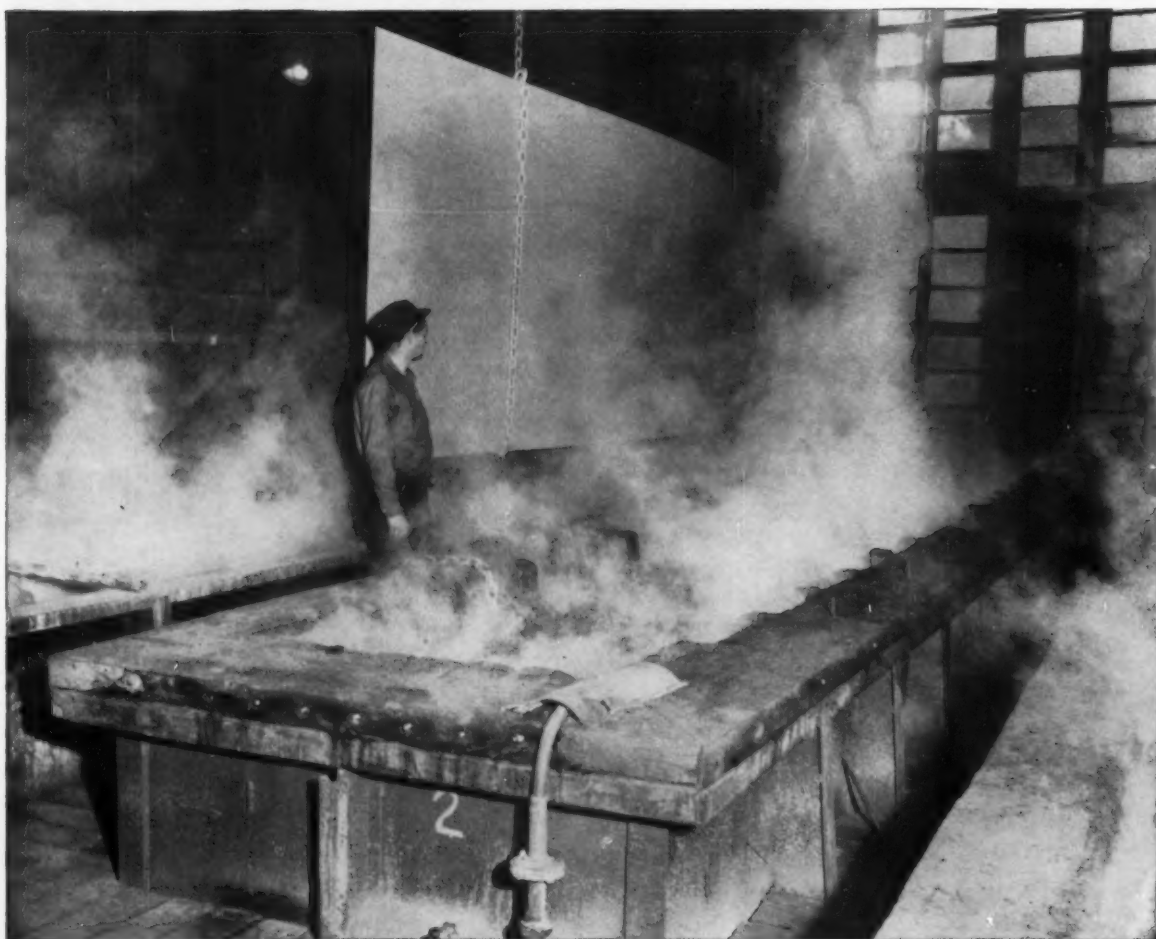
fittings, in the materials you need — when you need them. Buying and delivery are more closely controlled, too. Check with Mr. Tubes on your next job. He can be reached at any B&W Tubular Products Division District Sales Office. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.



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Seamless welding fittings and forged steel flanges, seamless and welded tubular products, solid extrusions — in carbon, alloy, stainless steels and special metals.

B.F. Goodrich report:



Soaking steel for ships in steaming acid

B. F. Goodrich improvements in rubber brought extra benefits

Problem: That ton of steel plate, soon to be part of a U. S. destroyer, is about to be plunged into a steaming acid bath. This job of cleaning rust and scale off metal used to be plenty dangerous because nothing could hold the corrosive acid. All kinds of tanks were tried—wood, masonry, steel. Yet acid leaked onto the floor constantly—a waste, a hazard to workers.

What was done: A leakproof tank seemed impossible until B.F. Goodrich engineers came up with something entirely new in the way of a protective lining. They developed a combination lining of hard rubber sandwiched

between soft rubber, called Triflex, that stands the hot, corrosive acid. The rubber is locked to the steel tank by the exclusive B.F. Goodrich Vulcalock process.

Savings: Acid leaks stopped wherever this B.F. Goodrich lining was used. The waste and hazard of messy, acid-wet floors became a thing of the past. At the shipbuilding company pictured here, B.F. Goodrich rubber-lined tanks have seen service since 1940, are still in use.

Why specify B. F. Goodrich: B. F. Goodrich specializes in rubber equipment to handle acids and other

corrosive chemicals. When you buy B.F. Goodrich linings you buy years of engineering background with it—experience that makes sure your lining will be exactly fitted to meet all the special requirements of your work. *B.F. Goodrich Industrial Products Company, Tuscaloosa, Alabama, or Dept. M-335, Akron 18, Ohio.*





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Yes, We Need A Tax Cut But Not the Current Versions

With courage and intelligence, Congress could do this nation a great service along the tax cut route—if taxes are to be cut. But it would have to leave out politics and eliminate the traditional dodge, "Don't rock the boat with facts at election time."

So far, the Internal Revenue Service has had to carry out a maze of double talking, guilt complex and don't-look-now regulations. These, for the most part, have been built up over the years by our lawmakers' indecisions.

The law says soak the rich and leave the poor alone. Then along comes Congress and piles loop holes, special cases, allowances, and exceptions on the law. This makes it hard to implement and sets up special classes.

The attempt to pander to low income groups for political purposes leaves millions off the tax rolls: They neither know nor care about the real facts of government costs.

There is a lot of solemn talk about a tax cut to stimulate the economy. The Treasury Dept. has plenty of plans which are aimed to help where it will do the most good: In all tax brackets, in the industry areas where durable goods would be benefited; and in areas where many special cases,

exceptions, and other bundles of paradoxes could be eliminated.

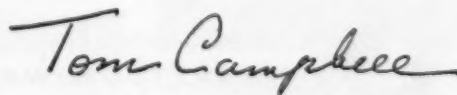
Congress should do something that would have a lasting benefit to the country. If it carries out some of the half-baked projects being talked about now, it will rue the day this was done.

People are not going to continue to pay 30 to 80 percent of their earned income to a government which won't recognize the power to tax is the power to destroy. They will—as many do—give up and figure they have done enough at a certain level. That loses for the country, ideas, production, skills, and intelligent chance taking.

Companies are not going to buy durable goods, improve machinery, renovate plant and equipment, or take long shots on sound ideas unless Congress recognizes and removes the road blocks in our antiquated tax laws.

Some will say that such a wholesale revision of tax laws can't be done in an election year. Why not? It was never done right in non-election years unless you call the 1954 attempt "changes".

If we have become so morally dishonest that our lawmakers can't come up with a fair and honest tax law once and for all, we are headed for spiritual degeneration.



Editor-in-Chief

**Used where metals
and slags are poured . . .**



HARBISON-WALKER BLACK PATCH

Plastic Graphite Refractory

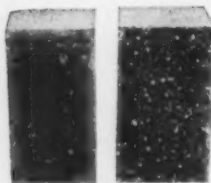
- reduces costs
- improves service
- assures cleaner metal

Monolithic linings formed with H-W BLACK PATCH withstand severe corrosive and erosive action of various metals and slags, resist wetting and penetration and remain cleaner because there is less slag adherence.

When heated, H-W BLACK PATCH develops a strong ceramic set and a close texture which, together with the oxidation inhibitors, greatly retard burning of the carbon. In addition, the graphite component enhances the high resistance to thermal shock and increases the refractoriness of H-W BLACK PATCH.



NEW ZIP-OPEN CARTON aids in efficient handling of the plastic slabs. H-W BLACK PATCH is available in the form of plastic slabs 12" x 9" x 1"; in a compact mass in drums; or as a dry mixture in sacks, for mixing with water when used.



5-HOUR HIGH TEMPERATURE TEST SHOWS BLACK PATCH SUPERIORITY

Result of 5-hour test at 2730°F. Note difference in degree of oxidation. Test piece at left—ordinary graphite plastic; at right—H-W BLACK PATCH.

Some of the many important applications in which H-W Black Patch serves to advantage:

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LETTERS FROM READERS

Wages and Prices

Sir—It's agreed that the cost of producing any commodity will govern the retail price. Supply and demand have always governed the price of any commodity or article.

We can think of nothing more unrealistic than wage increases and increases in steel prices at this time. It just does not make sense. We have unemployment and still labor wants more money per hour. We have decreased demands for steel and steel prices are going to increase, so we have been told.

How quickly the whole downward trend in product demand and unemployment would be reversed should labor and industry agree on "No increases for labor and a slight reduction in present steel prices." —L. O. Williams, Pres., B-W Manufacturers, Inc., Kokomo, Ind.

■ We wonder if a \$5 a ton price cut in steel—which would amount to less than 50¢ on a refrigerator and under \$10 on a car—would really stimulate much buying? And we doubt that any steel company today could cut prices that much. Some are now in the red and such a price cut would put the rest of them in the same spot.

During the depression of the Thirties some non-union steel companies went out and quietly cut prices. Competitors who had to cut prices but couldn't cut wages got into serious trouble. And each time prices were cut the customers bought less—waiting for another drop—Ed.

Tape Controls

Sir—I was delighted to see your excellent article in the March 20 issue covering our machine tool tape controls. It was a stimulating experience for us to talk to your editors and convey our enthusiasm

for something we think is truly new. —R. M. Russell, Vice Pres. and Mgr., Hughes Products, Los Angeles.

Attention Exporters

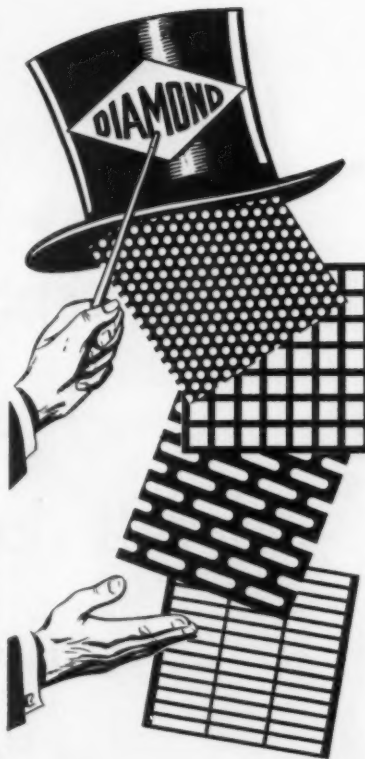
Sir—We are steel importers in India specializing in stainless steel who are interested in the American steel market.

Recently our government has resumed the issuing of import licenses, after a lapse of 15 months. We are anxious to contact U. S. exporters, mills, jobbers, and warehouses who can fill our needs.

Our needs are stainless steel sheets, strips and/or coils in AISI Type 302, 2D/2B finish in standard lengths in 20 through 23 gage. We also want stainless steel circles of 5 through 14 inches diam in varied quantities.—B. D. Nagpal, Partner, Amalgamated Universal Agencies, 53, Commercial Chambers, Masjid Bunder Road, Bombay 3, India.



"... And because my job doesn't give me a sense of fulfillment I have to drown my anxieties and frustrations in coffee."



Top-Hat Quality IN Perforated Metal

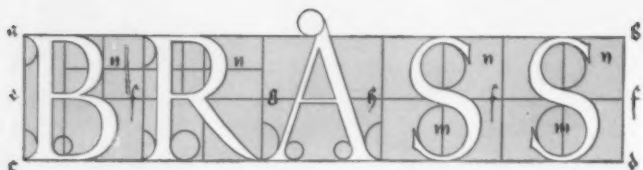
The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

Catalog 39 also illustrates and describes our high-quality lines of Ornamental Cane, Perforated-Metal Sheets for Acoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

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FATIGUE CRACKS

Way Out There

Somebody's wedding ring may now be orbiting through space.

That's the word we have from J. C. Travis, president of Handy & Harman, the firm which supplied the 24-karat gold plating for the Explorer 1 satellite. (Details on fabricating the Explorer's nose cone appeared in the March 6 issue of the IRON AGE.)



Quoting Mr. Travis: "A good part of the metal we get to rework for other purposes is the old gold and silver of some family heirloom. And the gold now circling the earth could have come from those sources."

While only valued at about \$14, this metal is performing a vital service for the Explorer. The plating, by providing a highly reflective surface, helps keep instruments from overheating, breaking down, or becoming inaccurate.

Handy & Harman, a 91-year-old company which recently opened a new factory at El Monte, Calif., furnished gold, silver, platinum and other precious metals and alloys to firms working on the Explorer.

The four-tenths of an ounce of gold used in plating the satellite is considerably less than the gold bar being weight checked (photograph) at El Monte. It weighs over 502 ounces and is worth more than \$17,000.

Hurry Back

When travelers from earth blast off for outer space they'll probably be using equipment with a money-back guarantee.

"By the time of the first manned space flight," says Robert H. Brown, vice president of Tenney Engineering, Inc., "manufacturers should have done such a thorough job of testing they can offer buyers a money-back guarantee."

Brown's company makes environmental test chambers, which simulate any desired combination of climate, temperature, humidity, and altitude.

Puzzler Answer

Winners of the "across the river" puzzler (Feb. 13 issue):

Angeline Cutitta, Sylvania Electric Products, Inc., G. H. Salter, General Electric Company, E. A. Chimner, Bill Woodruff, Mexico Refractories Co., Dave Jaffe, Jaffe Iron & Metal Co., J. Donald Osier, Oneida, Ltd., Dave Newcomb, Eddie Seay, The Gary Post-Tribune; Alex Pawlikowsky, A. B. Dick Co., Ray W. Marshall, William Waisane, Suffolk Industrial Welding.

Also R. E. Crabtree, A. E. Vanderberg, Fisher Steel & Supply Co., Erwin Loewy, Rose Lantos, Industrial Welding Co., J. J. Reich Reich-Huntington Iron Works, Inc., R. E. Christin, Electric Heat Treating Co., V. B. Riley, H. B. Smith Machine Co., R. W. Germann, Patapsco Scrap Corp., W. W. Bell, The Lummus Company, Edmond A. Bell, Spfld. Gas Light Co., S. David Brodsky, Brodsky and Co., The North American Manufacturing Company, Jim Mull.

Answer: Two sons cross, one son returns, mother crosses, other son returns, two sons cross over, one son returns, father crosses, other son returns, and both sons cross and join the parents.

Atlas

PICKLE TANKS END COSTLY REPLACEMENT



... outlast wood 10 to 1!

Wooden tanks, because of their inherent instability, create a continuous maintenance and replacement problem. Atlas construction uses corrosion-resistant linings and acid brick joined with the proper corrosion-proof cement to end maintenance problems and give a service life of 10 to 1 over wood. Atlas tanks provide positive corrosion protection.

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CORPORATION
MERTZTOWN, PENNSYLVANIA

NOW You can use HUSSEY COPPER

*...for every
Copper
application*



MAKE FULL USE OF THESE CHARACTERISTICS

- Electric Conductivity
- Flexibility
- Thermal Conductivity
- Weatherability
- Corrosion Resistance
- Non-Contamination
- Ease of Fabrication
- Efficient Plating
- Lifetime Durability
- High Finish
- Lasting Beauty

The abundance and low cost of Hussey Copper now makes it possible to use Hussey copper and brass *everywhere* the characteristics of these metals fit best.



C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
Rolling Mills and General Offices
PITTSBURGH 19, PA.

SIMONDS

INDUSTRIAL CUT GEARS

LARGE OR SMALL
HEAT TREATED OR
PLAIN



SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in

cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

Custom GEAR CUTTING

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.



QUALITY
GEARS
FOR OVER
65 YEARS

SPUR GEARS
BEVEL GEARS
MITRE GEARS
WORMS WORM GEARS
RACKS PINIONS

Also stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.



THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH PITTSBURGH 22, PA.

COMING EXHIBITS

Powder Metallurgy Show — April 21-23, Sheraton Hotel, Philadelphia. (Metal Powder Assn., 420 Lexington Ave., New York 17.)

Tool Engineers Show — May 1-8, Convention Hall, Philadelphia. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Foreign Metalworking — May 7-17, Coliseum, New York. (U. S. World Trade Fair, 331 Madison Ave., New York 17.)

Western Material Handling Show — May 8-10, Great Western Exhibit Center, Los Angeles. (Information: 2809 Sunset Blvd., Los Angeles 26.)

Southwestern Metal Show — May 12-16, State Fair Park, Dallas. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Foundry Show — May 19-23, Public Auditorium, Cleveland. (American Foundrymen's Society, Golf & Wolf Rds., Des Plaines, Ill.)

Packaging Show — May 26-30, Coliseum, New York. (American Management Assn., 1515 Broadway, New York 36.)

MEETINGS

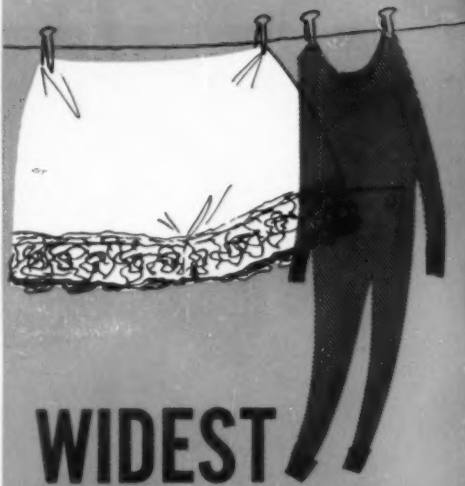
APRIL

Scientific Apparatus Makers Assn. — Annual meeting, Apr. 20-24, El Mirador Hotel, Palm Springs, Calif. Society headquarters, 20 N. Wacker Dr., Chicago.

American Society of Lubrication Engineers — Annual meeting and exhibit, Apr. 22-24, Hotel Cleveland, Cleveland. Society headquarters, 84 E. Randolph St., Chicago.

American Home Laundry Mfrs. Assn. — Annual meeting, Apr. 22-24, Boca Raton Club, Boca Raton, Fla. Society headquarters, 20 N. Wacker Dr. Chicago.

National Machine Tool Builders' Assn. — Spring meeting, Apr. 24-26, Chicago. (Continued on P. 16)



WIDEST APPLICATION

Whatever your cleaning job may be, there is a size and type of Malleabrasive shot or grit of a specialized hardness to do your job best.

Whether you use centrifugal or air-blast cleaning equipment—whether you want shot finish or grit finish—whether you clean steel, gray iron, malleable, bronze or aluminum, whether for cleaning before surface coating, enameling, metallizing, galvanizing, you can have in Malleabrasive the right type to do it best.

The full and complete Malleabrasive process—used by us exclusively—enables us to combine the toughness of malleable iron with various degrees of hardness to produce abrasive "tailored" to your special needs.

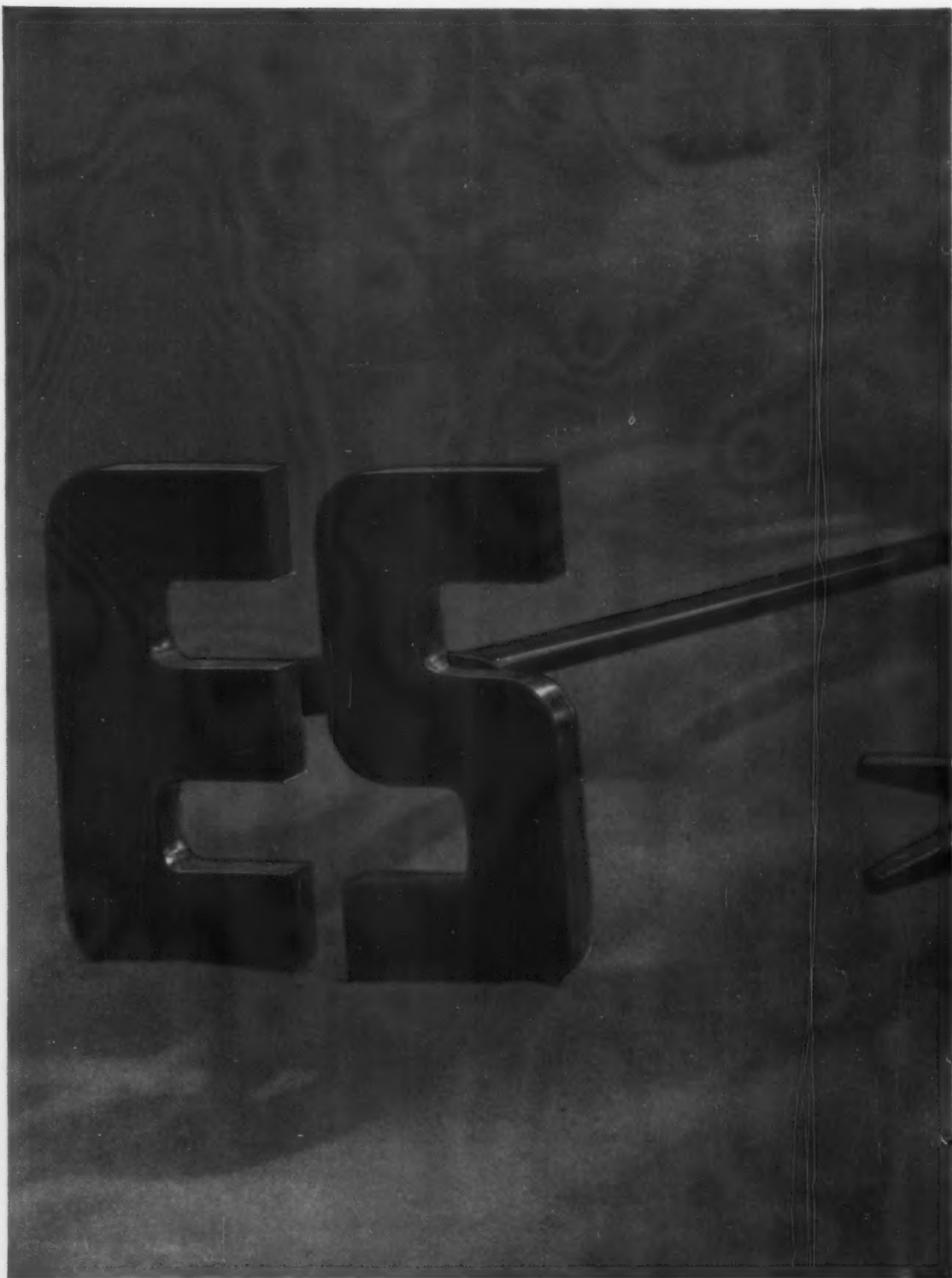
Our service personnel is available to consult with you without obligation. Write us.



THE GLOBE STEEL ABRASIVE CO.
Mansfield, Ohio

Sold by Pangborn Corp., Hagerstown, Md., and by many leading distributors of foundry supplies from coast to coast.

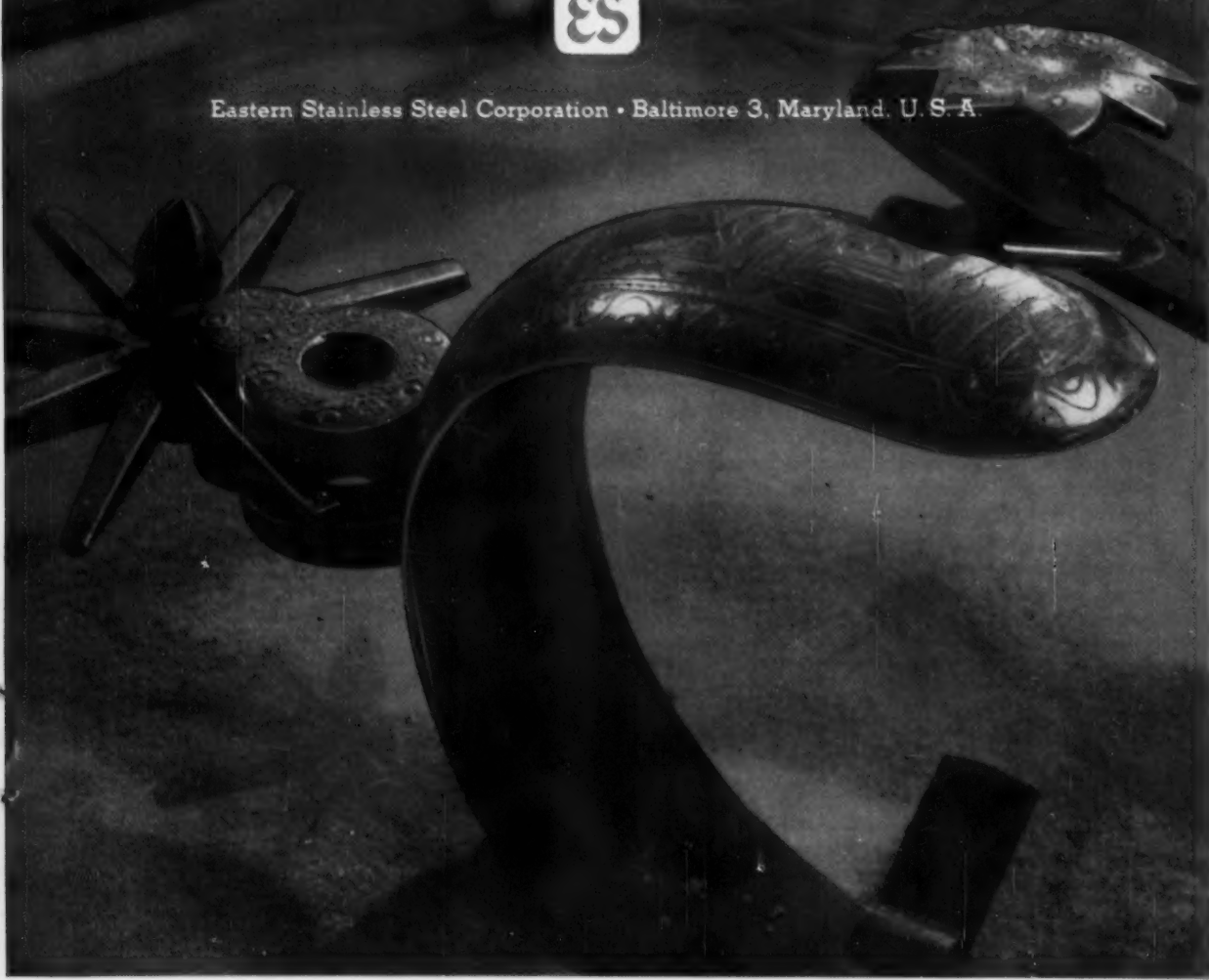
MALLEABRASIVE

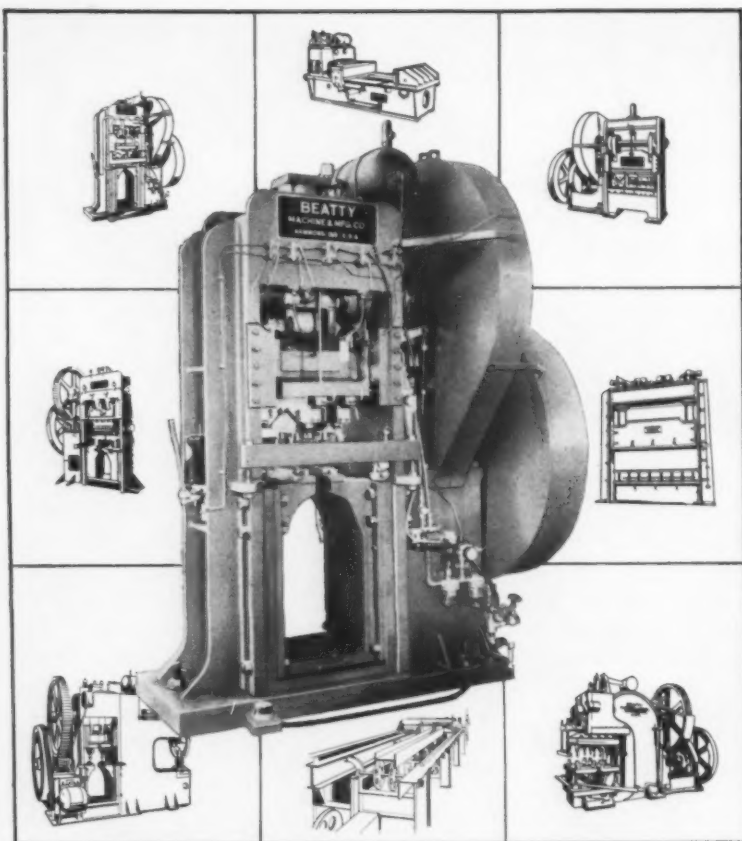


In stainless steel sheets and plates, the **best known brand** in the world is Eastern! And from east to west . . . for industrial and product applications covering literally thousands of different requirements . . . Eastern's products and services are available through the finest organization of warehouse distributors in the whole new world of stainless steel. Write for your distributor's name.



Eastern Stainless Steel Corporation • Baltimore 3, Maryland, U. S. A.





IN ONLY 2 PASSES INSTEAD OF 4...

This new No. 7 Detail Flange Punch accomplishes the flange punching of I-beams in only two passes, where ordinary equipment requires four passes. There's production speed that pays off every hour of operation. Especially designed to speed single-hole flange punching in small structural steel fabricating shops, this compact punch incorporates entirely new design that eliminates the end-for-end turning of beams — requires less floor space than open-throat installations.

The punch has 100-ton capacity, mechanically driven guillotine-type. It will punch up to 1 1/4" diameter hole through 1" mild steel and handles beams with 6" to 36" webs. Opening through frame is 26", length of stroke — 2", distance ram to table, stroke up — 12".

WRITE FOR FULL DETAILS

Get full information on this compact, high production flange punch . . . or on the complete line of Beatty heavy metal-working equipment.



BEATTY MACHINE & MFG. CO.
936 150th St. Hammond, Indiana

EXHIBITS, MEETINGS

(Continued from P. 13)

25, Edgewater Beach Hotel, Chicago. Society headquarters, 2071 E. 102nd St., Cleveland.

National Assn. of Architectural Metal Manufacturers — Annual convention, Apr. 27-May 2, Shamrock Hilton, Houston, Tex. Society headquarters, 228 N. La-Salle St., Chicago.

The Electrochemical Society, Inc. — Semi-annual meeting, Apr. 27-May 1, Statler Hotel, New York. Society headquarters, 1860 Broadway, New York.

Rail Steel Bar Assn. — Annual meeting, Apr. 28-30, The Inn, Williamsburg, Va. Society headquarters, 38 S. Dearborn St., Chicago.

Grinding Wheel Institute — Semi-annual spring meeting, Apr. 30-May 1-2, Grand Hotel, Point Clear, Ala. Society headquarters, 2130 Keith Bldg., Cleveland.

National Screw Machine Products Assn. — 25th anniversary meeting, (annual industry meeting), Apr. 30-May 3, Drake Hotel, Chicago. Society headquarters, 2860 E. 130th St., Chicago.

MAY

Machinery Dealers National Assn. — Annual convention, May 5-7, Eden Roc Hotel, Miami Beach, Fla. Society headquarters, 1346 Connecticut Ave., Washington, D. C.

National Welding Supply Assn. — Annual convention, May 5-7, The Americana, Miami Beach, Fla. Society headquarters, 1900 Arch St., Philadelphia.

National Assn. of Sheet Metal Distributors — Spring meeting, May 8-9, Sheraton-Blackstone Hotel, Chicago. Society headquarters, 1900 Arch St., Philadelphia.

• less wear on runways...

• longer life for chain



JEFFREY BARLOOP CHAIN

*Interchangeable with your
flat-and-round chain.
It is inexpensive and long-lived.*

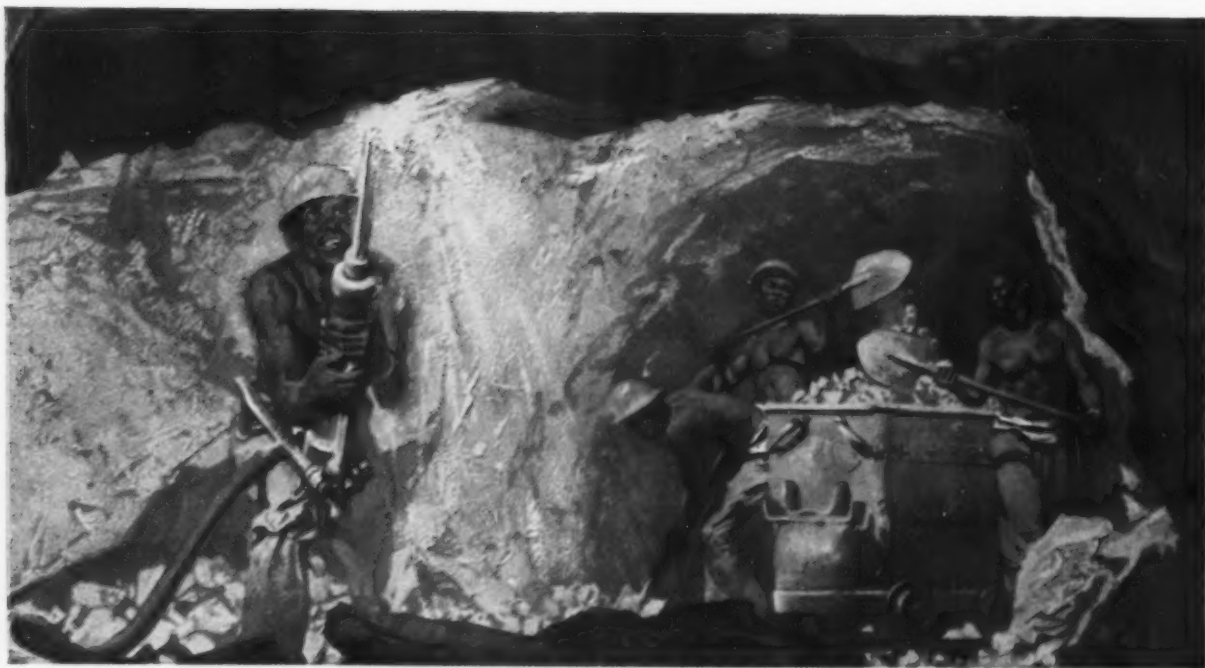
Jeffrey barloop chain presents low bearing pressures to surfaces on which it slides. Serves well in handling of non-abrasive or semi-abrasive materials because the open strap construction makes it self-cleaning. No trapping of corrosive, abrasive materials being handled by the conveyor to accelerate pin wear.

Installing and modification of conveyors are simplified with Jeffrey barloop chain. It can easily be taken apart and put together at any point. There's less downtime for conveyor upkeep.

Ask your nearby Jeffrey distributor about Jeffrey barloop chain for general elevator and conveyor service. He can advise on and take care of most of your chain requirements. The Jeffrey Manufacturing Company, 925 North Fourth Street, Columbus 16, Ohio.



CONVEYING • PROCESSING • MINING EQUIPMENT... TRANSMISSION MACHINERY... CONTRACT MANUFACTURING



During 1957 the diamonds processed by Norton for industrial purposes were far greater,

How diamonds... *become Industry's*

Your safeguard in buying diamond
wheels is Norton leadership
in their development and manufacture

Norton was first to introduce bonded diamond wheels
... all three types: resinoid, metal and vitrified ... does
all its own checking and sizing of diamonds ... certifies
the diamond content ... duplicates wheel specifications
with consistent accuracy ... brings you a complete line,
covering every application.



List Price \$32,540 — and well worth it! This Norton diamond wheel, built for a prominent ceramics manufacturer, precision-grinds extremely hard parts. Its ability to last so much longer and grind so much better than other wheels more than justifies its first cost.



For Internal Grinding
Norton makes these smallest diamond wheels, together with every other size and type required for surface or cylindrical grinding, sharpening, sawing or cutting-off. And each wheel has the long-lasting excellence that assures the user steady profits.



in number and in total carat weight, than were available as gem diamonds in the U. S.

mined or man-made...

Crown Jewels

This leadership, firmly established by producing the finest cutting diamond wheels, began when only natural diamonds, known as bort, were available for industrial use. In 1930, Norton was first in this country to make, and in 1934 first to sell, successfully developed bonded diamond wheels.

And today, similar pioneering by Norton is assured in the processing of grinding wheels using diamonds, mined or man-made. That is why Norton diamond wheels continue to live up to their long-established reputations for exceptional value.

And that is why they are recognized as the *Crown Jewels* of industry — not only for familiar grinding operations on carbides, ceramics, stone and glass, but for solving the grinding problems of new metals, alloys and materials. Your Norton

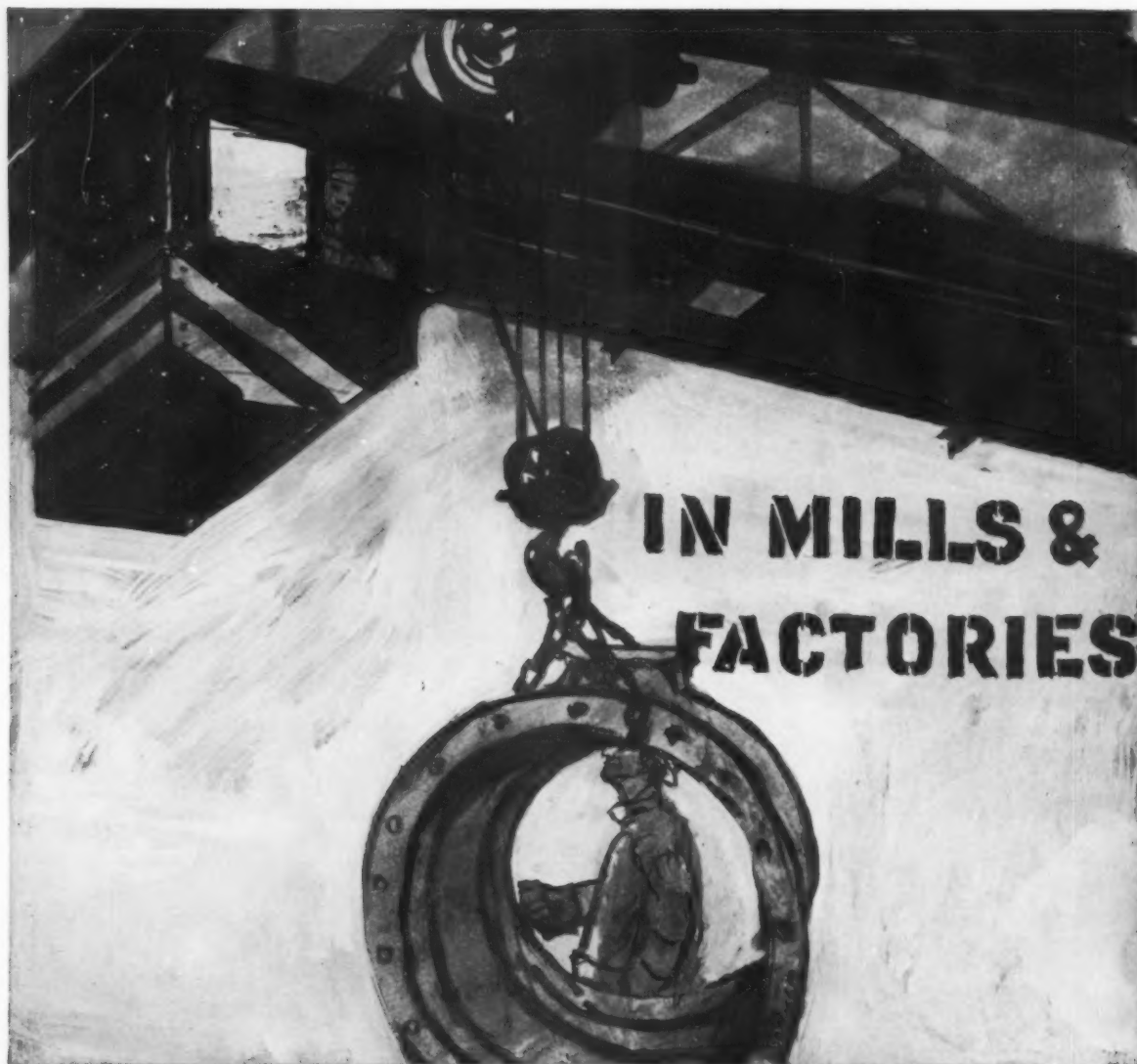
Abrasive Engineer or Norton Distributor will be glad to give you prompt service and additional facts about diamond wheels. Or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors all around the world.



NORTON PRODUCTS

Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

Making better products...to make your products better



NOTHING TRANSMITS POWER WITH THE TENACITY OF ROEBLING ROYAL BLUE WIRE ROPE. The other reasons why this wire rope gives long, dependable service are equally outstanding. It has exceptional flexibility, shock and abrasion resistance, and high strength beyond the realm of common wire rope usage. Collectively, these qualities give you a wire rope that is a superior value . . . Roebling Royal Blue. For details of the most widely accepted wire rope in Roebling's history, see your local distributor or write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

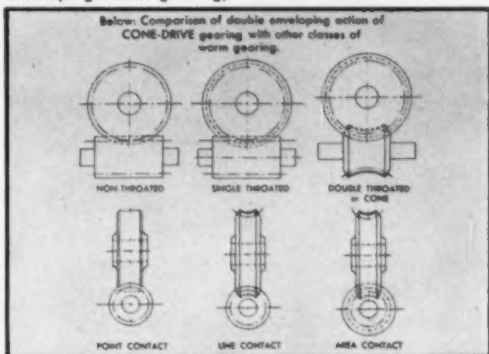


ROEBLING 
 Branch Offices in Principal Cities 
 Subsidiary of The Colorado Fuel and Iron Corporation

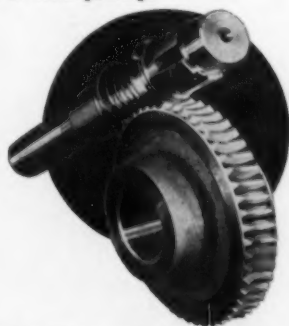
TEAR OUT AND MAIL IN FOR COMPLETE DATA

How to get the most out of Worm Gearing

If a right-angle drive is needed in your product and you require maximum capacity for your dollar, then the Cone-Drive double-enveloping type will give it to you. The sketch below shows the apparent advantages of Cone-Drive gearing as compared to other worm gear types. Double-enveloping worm gearing, the most modern and efficient



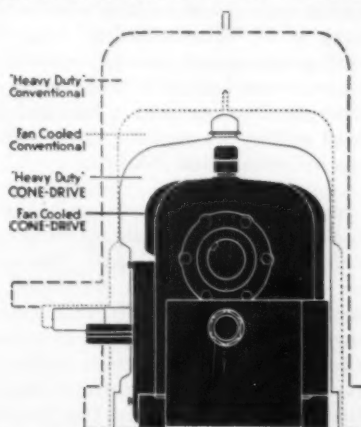
form, has straight-sided teeth in both worm and gear. Both elements of Cone-Drive are throated and envelop each other, providing a multiple tooth area contact. This means greater load-carrying capacity than is possible with any other type of worm gearing.



Double-enveloping worm gearing is available from Cone-Drive Gears in complete lines of gearsets, speed reducers and gearmotors. Gearsets are stocked in center distances from 2" thru 24", capable of handling loads from fractional to over 1600 horsepower. A complete line of mountings for gearsets is also stocked.



Speed reducers and gearmotors with Cone-Drive double-enveloping worm gearing are unusually compact and powerful drives that handle shock loads with ease. Yet, they provide power transmission smoother than that of hydraulic systems. Another advantage, unique to double-enveloping worm gearing, is their ability to regenerate themselves when wear occurs. Both worm and gear tend to reproduce the correct form in the other when wear occurs.



Double-enveloping worm gearing with its "wrap-around design" requires shorter center distances than cylindrical worm gearing to handle the same loads. As a result, Cone-Drive speed reducers have smaller housings with corresponding savings in weight and space. Bulky gear trains can often be replaced with a single Cone-Drive speed reducer or gearset.



DOUBLE-ENVELOPING WORM GEARSETS



DOUBLE-ENVELOPING WORM GEAR SPEED REDUCERS



DOUBLE REDUCTION WORM GEAR SPEED REDUCERS



DOUBLE-ENVELOPING RIGHT ANGLE GEARMOTORS

CONE-DRIVE GEARS

DIVISION MICHIGAN TOOL COMPANY

7171 E. McNichols Road • Detroit 12, Michigan

Telephone: TWInbrook 1-3111

Please send me information on following:

☐ Gearsets ☐ Gearmotors ☐ Speed Reducers

Name _____

Title _____

Company _____

Street _____

City _____ State _____

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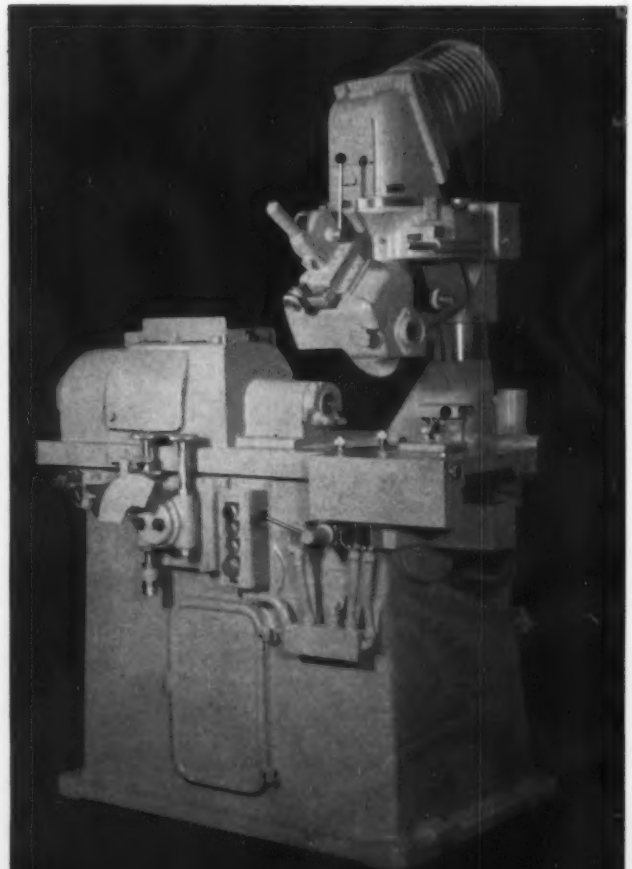
New No. 4-4 Sharpening Machine Features—

INFINITELY VARIABLE TABLE SPEEDS,

*Air-Draulic actuation
provides convenient power, smooth
operation, minimum maintenance.*

This new No. 4-4 Sharpening Machine is an automatic sharpening machine for sharpening hobs and form-relieved cutters. It has air-draulic table actuation, adjustable stroke length, infinitely variable table speeds, and built-in wheel dresser for work up to 4" diameter and 4" long. It offers convenient set-up and reduced sharpening time, with positive mechanical control over all sharpening elements. Spacing, lead of flute and radialism are held within tolerances for all accuracy classifications including Class AA hobs.

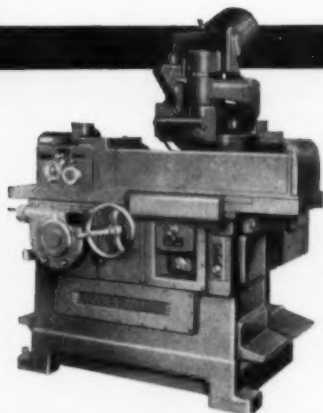
The new closed air-draulic system has no piping, hydraulic motor or tanks. Leakage is not a problem as with most hydraulic systems. The air-draulic system connects readily with compressed air lines available in most shops. This combination of air and hydraulic pressures provides smoothness and infinite adjustment in machine operation, and offers cost advantages in machine maintenance. Table speed is adjustable from 5 to 35 strokes per minute at a $7\frac{3}{4}$ " stroke. Length of stroke can be adjusted from 3" to $7\frac{3}{4}$ ". Wet grinding is optional at extra cost.



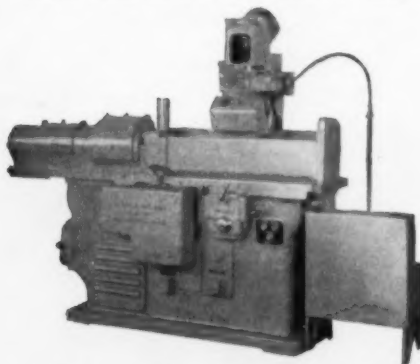
New Model No. 4-4 Automatic Sharpening Machine reduces set-up and sharpening time through stroke control and infinitely variable table speeds.

Your present machines may be factory-rebuilt! If you have No. 4-4 Automatic Sharpening Machines in your shop, Serial No. 100 or later, you may have them completely rebuilt at the factory, incorporating these new machine features and air-draulic system. Factory rebuilt machines have all of the features of a new machine, and carry a new machine guarantee. Write Dept. 13 for details and estimate of cost for rebuilding your present machines. New illustrated bulletin supplies complete information on new machines.

ADJUSTABLE STROKE!



No. 6-5 is a precision sharpening machine, with wet grinding as a standard feature, making it ideal for sharpening carbide tools. Takes work up to 6" dia. x 5" long.



No. 10-12 is a heavy duty machine, built to accommodate work up to 10" dia. x 12" long. Wet grinding attachment is available as extra equipment.

*Hob and cutter sharpening
is on a production basis with
Barber-Colman automatic sharpening!*

Barber-Colman Sharpening Machines sharpen hobs and cutters cheaper, faster and more accurately than can be done by any other method. They provide repeat accuracy and automatic operation for either large run or job-lot sharpening. Accurate sharpening is important to tool life, and must be maintained if the tools are to cut accurate parts. In addition to the newly improved No. 4-4, two other sharpening machines are built by Barber-Colman to provide a complete range of sharpening for hobs and form-relieved cutters up to 10" diameter by 15" length. If you have hob or cutter sharpening problems, consult Barber-Colman engineers for help in meeting production requirements.

BARBER-COLMAN COMPANY

644 ROCK STREET • ROCKFORD, ILLINOIS

Hobs • Cutters • Reamers • Hobbing Machines • Hob Sharpening Machines



UNIVERSAL-CYCLOPS STEEL, EMPIRE, REEVES MERGE

- **to expand facilities**
- **widen product range**
- **excel in quality and service**

Universal-Cyclops, Empire and Reeves . . . three names long synonymous with quality steels and steel products . . . have combined their manufacturing facilities, management skills, and research activities for the benefit of customers, shareholders and employees alike.

The consolidation, establishing Universal-Cyclops Steel Corporation as the parent company and Empire-Reeves Steel Corporation as a wholly-owned

subsidiary formed by the union of Empire Steel Corporation and Reeves Steel and Manufacturing Company, results in an operating group prepared to offer new advantages to steel users everywhere.

Accent on quality and service will be a continuing keynote. Combined resources will provide expanded and improved facilities at all present plant locations plus more stainless strip capacity at a new plant in Coshocton, Ohio.

Yes, from top quality carbon, silicon steels, and galvanized sheets to flawless stainless, tool steel, and high temperature metals; from garden-variety steel products to material for jet engines and missiles . . . you can count on Universal-Cyclops and Empire-Reeves to serve its markets and America *better than ever before.*



Universal-Cyclops Steel CORPORATION

Plants: Bridgeville and Titusville, Pa., and soon in Coshocton, Ohio

Subsidiary plants: Mansfield and Dover, Ohio





UNITED

45" x 115" SLABBING MILL



UNITED ENGINEERING AND FOUNDRY COMPANY

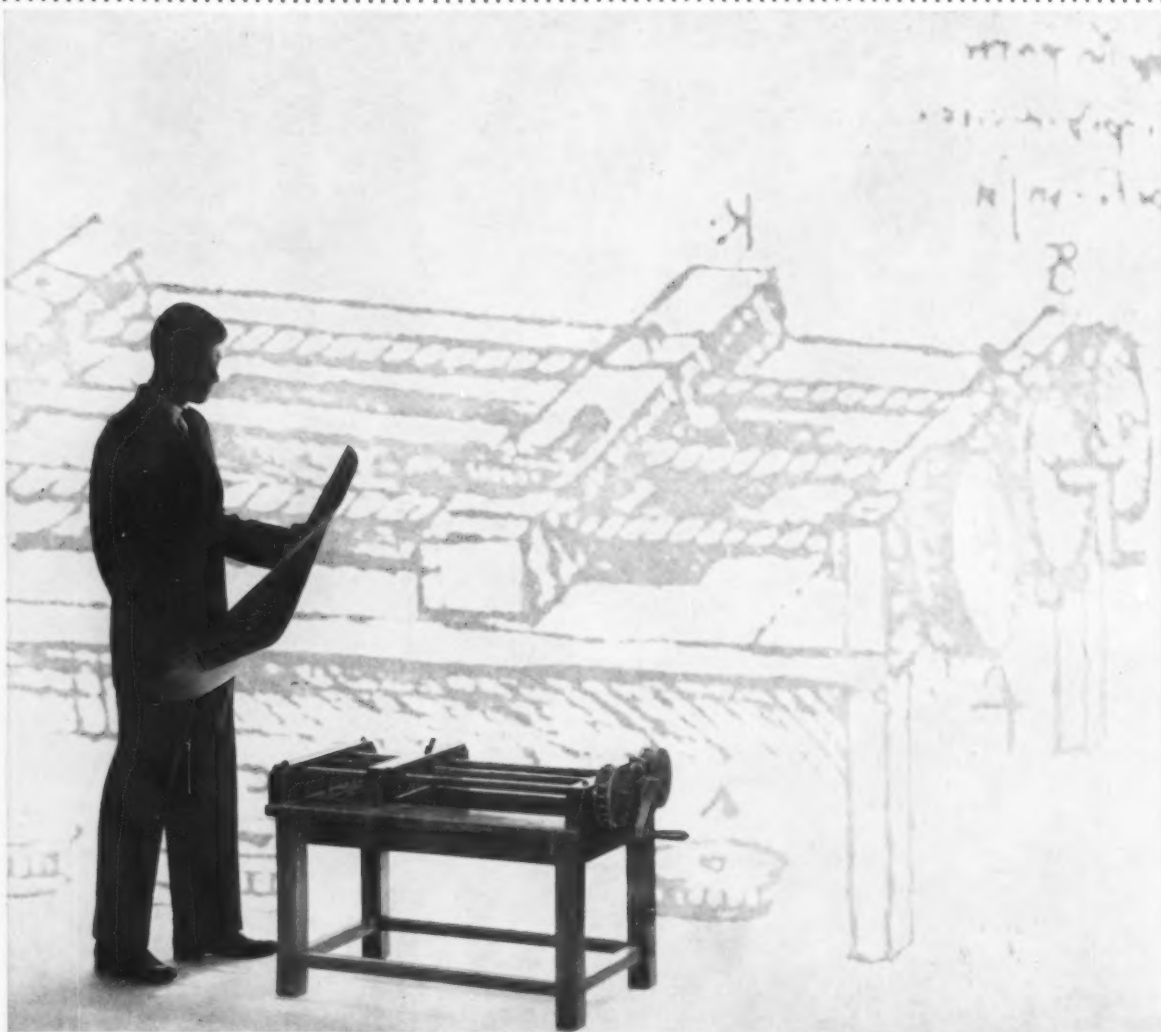
PITTSBURGH, PENNSYLVANIA

Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington.

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls,
Auxiliary Mill and Processing Equipment, Presses and other heavy machinery.
Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

creative designing calls for an open mind



Leonardo Da Vinci's design for a screw cutting machine

Model courtesy of IBM

EVEN THIS DA VINCI DESIGN COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER.

The kind of bearings your SKF engineer recommends depends solely on your requirements, not on what he has to offer. That's because the SKF line includes all four basic types of ball and roller bearings in many thousands of sizes. This gives him the kind of flexibility he needs to keep an open mind on any bearing problem. Give your problem to SKF and see.

7832



Spherical, Cylindrical, Ball, and *Tyson* Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

REG. U. S. PAT. OFF.



102,000 lbs. of steel was unloaded, sorted and stockpiled in one hour with the help of this American 300 Series Self Propelled Crane. A complete line of American Cranes and Excavators provide fast, maneuverable, versatile materials handling equipment for every application.

Working a clamshell bucket is just one of many jobs American DiesElectric Locomotive Cranes handle with cost-saving efficiency. This self contained crane will also work with hook, magnet, orange peel or grapple fronts —has ample power to switch railroad cars, too!



TRIGGER FAST AIR CONTROLS BOOST CRANE'S OUTPUT 20%

Fast, highly responsive air controls actually increase the daily production output of big American DiesElectric* Locomotive Cranes by 20%! Leading firms in the country's heavy industries have swung to American for their volume materials handling jobs. These cost-conscious firms have learned that the American's patented diesel-electric power system cuts operating costs sharply. Electrically driven trucks provide smooth switching and car spotting power while reducing maintenance costs up to 50%! Dependable diesel power on the machinery

deck results in low cost materials handling power.

A variety of fronts . . . hook, clamshell, magnet, orange peel or grapple . . . provides every industry with a versatile, heavy duty, high production machine that will pay for itself in a hurry.

If you're interested in boosting handling volume while trimming costs, investigate American's new concept in crane design—the DiesElectric Locomotive Crane! Specifications on this complete line offering capacities from 25 to 130 tons are available immediately by writing:

*trademark

EXCAVATORS-CRANES
to 2 yds.-50 tons

LOCOMOTIVE CRANES
to 130 tons

DERRICKS-HOISTS
to 800 tons

REVOLVER CRANES
to 400 tons

AMERICAN HOIST

and Derrick Company

St. Paul 7, Minnesota

AMERICAN HOIST
PACIFIC COMPANY
Special materials
handling equipment

CROSBY-LAUGHLIN
DIVISION
Drop forged fittings
for wire rope-chain

A limited number of locomotive cranes available for rental service

big or small, Surface mechanized furnaces pay off

Whether your volume is modest or vast—with short runs or long—there are many ways to profit from Surface experience in mechanizing heat treat equipment for ferrous and nonferrous metals. All of them give you uniform duplication of results; upgraded labor; reduced unit costs; expanded capacity; and strengthened competitive position.

➡ You may require a single batch type furnace, (right above) in which work is handled automatically from charge to discharge. For expanded facilities, a battery of such furnaces can be handled by one operator. Standard furnaces can also be linked in sequence to form an automatic heat treat line.

➡ You might want your furnaces integrated directly with machines at separate points in your production line, (right center). This line processes bearing races from raw stock through a sequence of manufacturing operations—machining, heat treating, and finishing.

➡ Your methods may call for a self-contained automatic heat treat line within your production line, (right below). Hoppers convert variable production from machining operations to the steady rate best for efficient heat treating. All operations are interlocked and continuous.

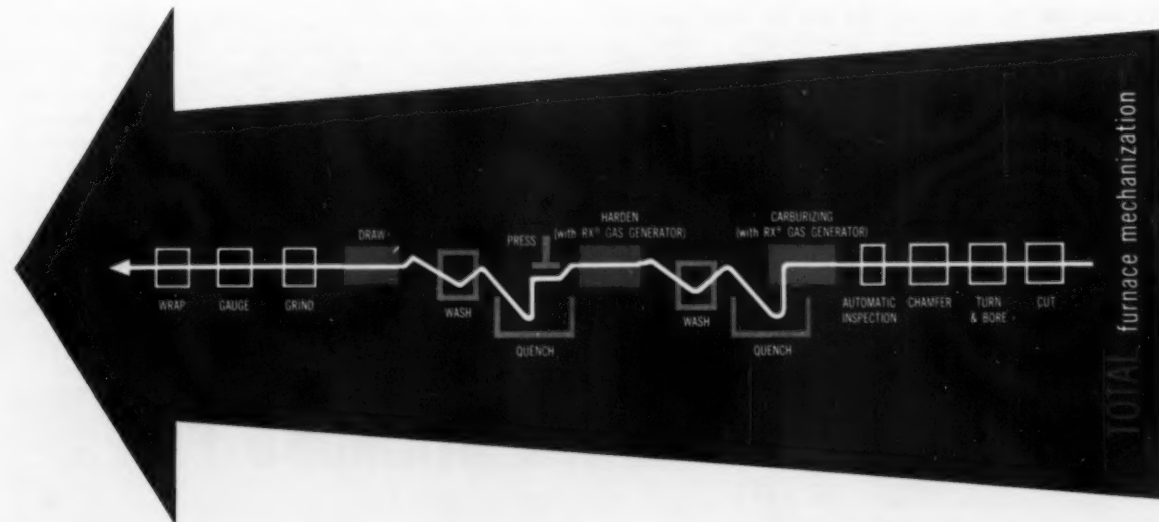
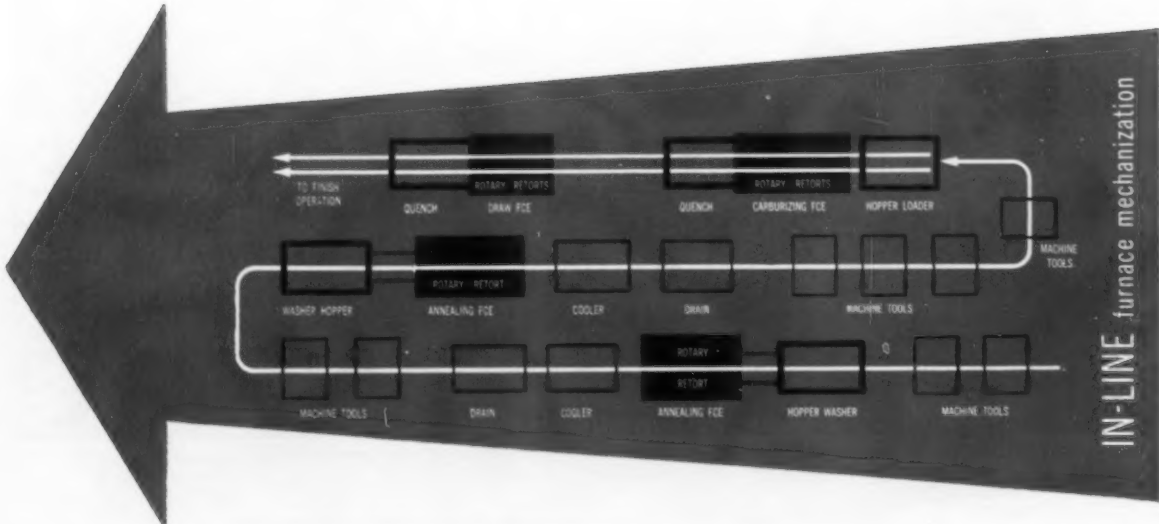
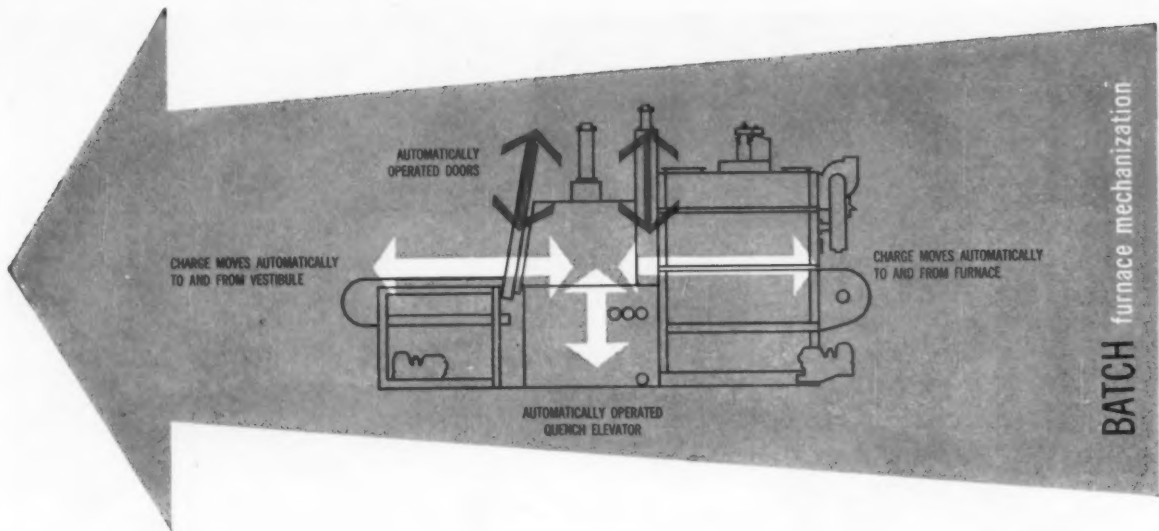
These are merely samples of the range and depth of mechanization know-how which Surface has accumulated since as far back as 1929. That was the date of installation of a completely automatic line for normalizing, hardening, and tempering transmission parts. Still operating, that line has paid for itself many times over.

Explore these advantages for your own operation; write for Bulletin SC-176.

Surface Combustion Corporation, 2373 Dorr St., Toledo 1, Ohio. In Canada: Surface Industrial Furnaces, Ltd., Toronto, Ontario.



wherever heat is used in industry





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So he wrote a treatise on files and their proper selection and use. Later we condensed this and published it as "File Philosophy." We've printed 19 editions since then, always adding to its fund of facts. Today, "File Philosophy" is the universally accepted authority on filing.

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Write us for a free copy of the new "File Philosophy."



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NICHOLSON FILE COMPANY, PROVIDENCE 1, RHODE ISLAND

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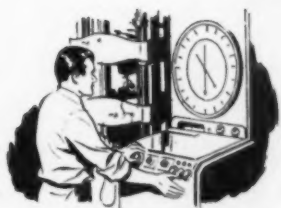


NICHOLSON and BLACK DIAMOND FILES

A FILE FOR EVERY PURPOSE



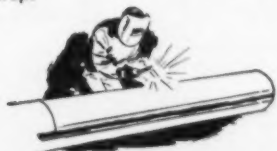
Premium quality extruded steel pressure tubing at standard prices



Transverse Strength, 30% to 50% higher than conventional, withstands higher internal pressures.



Improved Internal Finish offers less resistance to flow — reduces pressure drop.



Fewer and Faster Field Welds, due to close concentricity and uniform wall thickness. 50-foot lengths require fewer joints, reduce welding costs 50-60%.

High performance Chrome-Moly Alloy extruded steel pressure tubing ...in diameters from 14" to 18" o.d....in standard wall thicknesses ...in lengths from 20 to 46 feet...is now available from stock for immediate delivery at standard prices.

Other diameters, of Chrome-Moly and Austenitic Stainless, ranging from 10" to 20" with wall thicknesses $\frac{1}{2}$ " to $5\frac{1}{4}$ " and in lengths up to 50 feet, are available on a four-month delivery schedule.

The unusual properties of this extruded tubing, such as exceptionally high transverse strength, impact strength and ductility, make it ideally suited to high-temperature, high pressure applications in the power, petrochemical, food processing and other process industries.

Contact our nearest distributor or district office. Experienced application engineers are available for consultation.

Complete Engineering and Processing Services for:

Extrusions • Castings
Forgings • Machining

METALS PROCESSING DIVISION

CURTISS-WRIGHT

CORPORATION • 72 GRIDER ST., BUFFALO, N.Y.

Distributors: Capitol Pipe & Steel Products, Philadelphia, Penna. • Tube Sales, Los Angeles, California • **District Offices:** Chicago, Illinois, 208 South LaSalle Street • Wood-Ridge, New Jersey, Main and Passaic Streets • North Hollywood, California, Van Owen & Vineland • Dayton, Ohio, 131 North Ludlow Street • Export Division, 50 Rockefeller Plaza, New York, N. Y. • Montreal, Quebec, Canada, 1980 Sherbrooke Street, West.



You can **see** the difference, and you can **sense** the difference in your manufacturing economy when you change over to Bliss & Laughlin's new "Lusterized" Cold Drawn Bar Steel.

It automatically provides a brighter finish to fabricated parts on areas where you do not remove stock.

It is cleaner to handle . . . not so messy for men or machines to work with. It has an inherently smooth cold drawn surface for superior quality machine parts.

Its consistent uniformity, bar to bar, means improved machining efficiency . . . less stock waste.

This modern Cold Drawn Finish has become a real factor in reducing production costs. Specify B&L Lusterized Finish on your next order.

. . . in "LUSTERIZED FINISH" because it is . . .

- BRIGHTER
- CLEANER
- SMOOTH
- UNIFORM



↑
LUSTERIZED

↑
NON-LUSTERIZED

For further facts on Lusterized Finish, write for Bulletin #55.

LUSTERIZED FINISH COLD DRAWN BARS
BLISS & LAUGHLIN, INC.

GENERAL OFFICES: HARVEY, ILLINOIS

SALES OFFICES
IN ALL PRINCIPAL CITIES

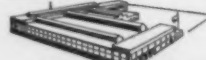
FOUR PLANTS:—



HARVEY, ILL.



DETROIT, MICH.



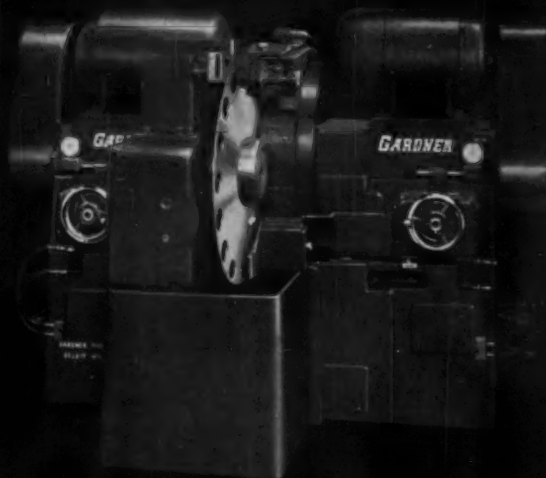
BUFFALO, N. Y.



MANSFIELD, MASS.



Horizontal Disc Grinders—For grinding one surface at a time on cast, forged or fabricated parts with either freehand or fixtured operation.



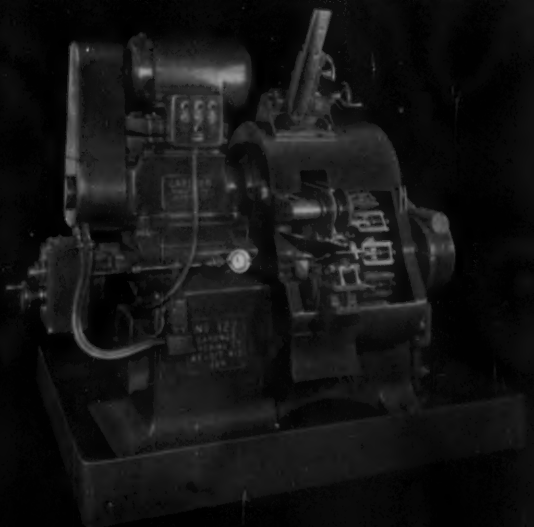
Precision Double Spindle Grinders—Grinds TWO parallel surfaces in ONE operation. Rotary, thrufeed or gun type work fixturing.

for flat surface grinding
... low unit cost
... volume production

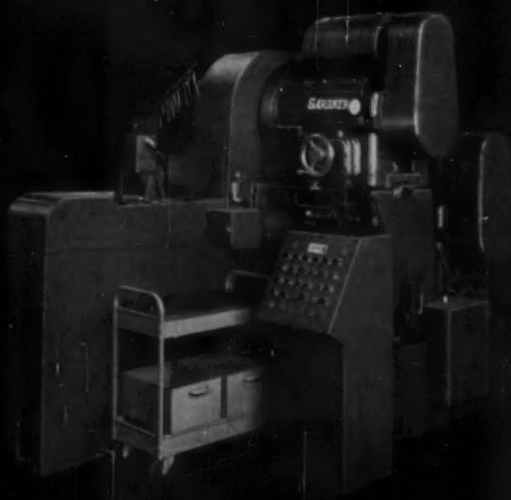
GARDNER

precision disc grinders
BELOIT, WISCONSIN

Single Spindle Grinders—For production grinding single surfaces. Manual and power-operated work-carrying fixtures available.



Special Purpose Disc Grinders—For sequence grinding, parallel surfaces, generating curved surfaces ... single or multiple surfaces in one setup.



brute **POWER**

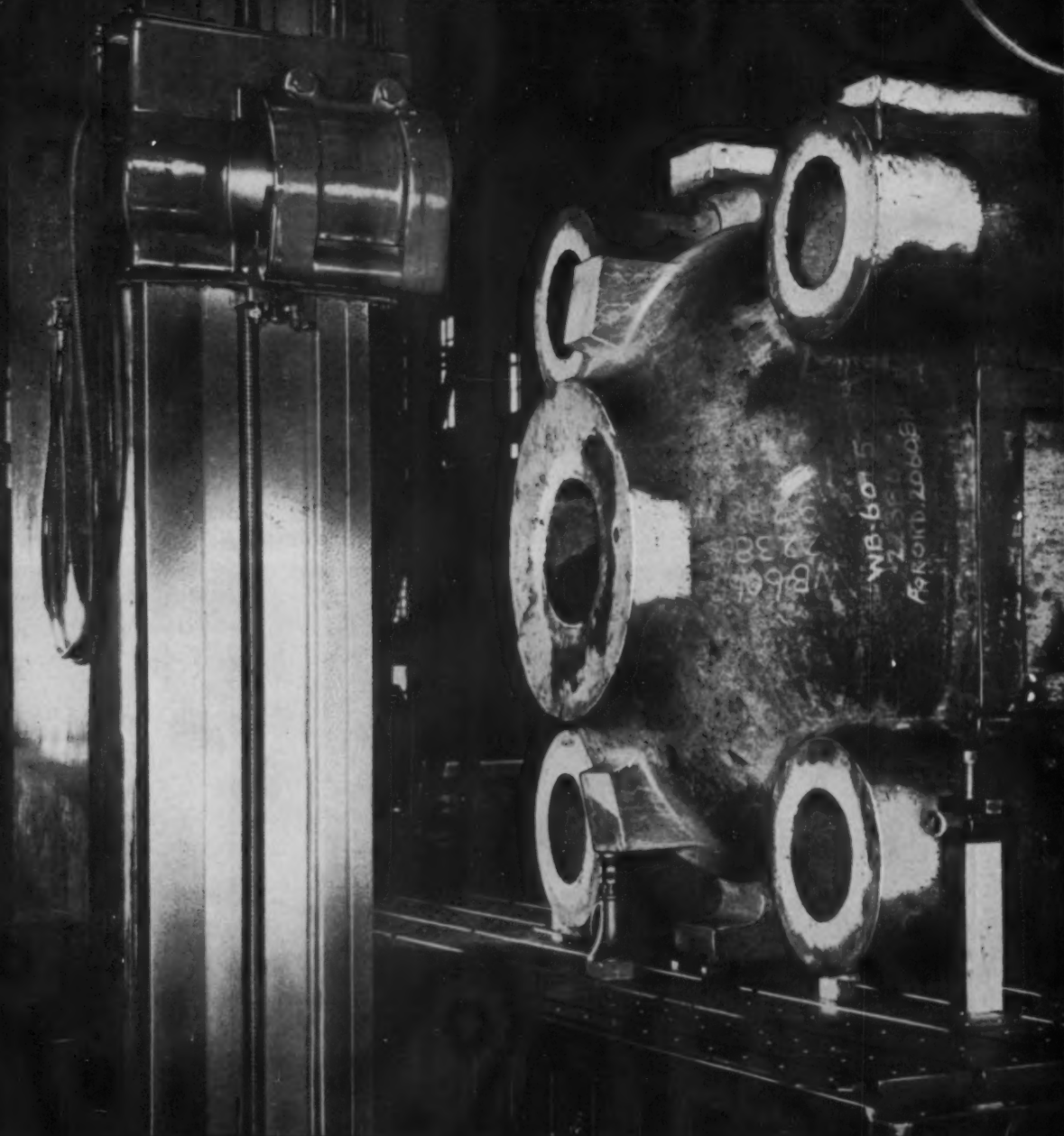
... flows from this Gray giant at the touch of a button.

Its massive design and tremendous rigidity guarantee heaviest carbide milling. Magically, precision boring to minute tolerances is equally available on this 8" Gray Horizontal.

Its amazing convenience permits small machine speeds for the first time in the elephant field.

That's why . . . large jobs don't grow old on a Gray.

The G. A. GRAY Co., Cincinnati, Ohio



GRAY



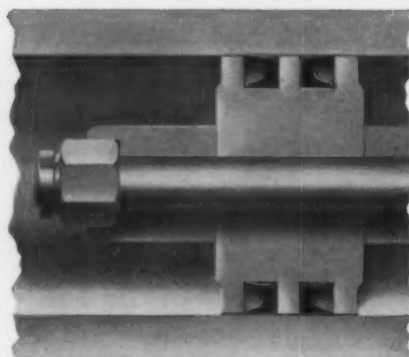
ONE OF THE GARLOCK 2,000



NEW FLARED-LIP U-CUP PACKING REDUCES FRICTION

Garlock's new homogeneous U-cups are designed for minimum frictional resistance in low pressure air or hydraulic cylinder applications. They are molded of synthetic rubber with flared sidewalls which also facilitate assembly, especially when cylinder bores vary slightly in size. Instantaneous sealing after sudden pressure changes is another advantage of the flared-lip design. Sizes $\frac{1}{2}$ " O.D. to $3\frac{3}{4}$ " O.D. are available from stock. Sizes to meet all AN6226 and JIC dimensional specifications.

Homogeneous U-cups are another part of the famous "Garlock 2,000" . . . two thousand different styles of packings, gaskets, and seals to meet all your needs. It's the only complete line . . . it's another reason you get unbiased recommendations from your Garlock representative. Call him or write for AD163.



The new Garlock 9511 U-cup Packing is recommended for pressures to 2000 psi. The flared-lip design creates an interference fit especially adaptable to applications involving sudden pressure changes. Clearance at the heel reduces friction, makes assembly easier.

THE GARLOCK PACKING COMPANY, Palmyra, N.Y.

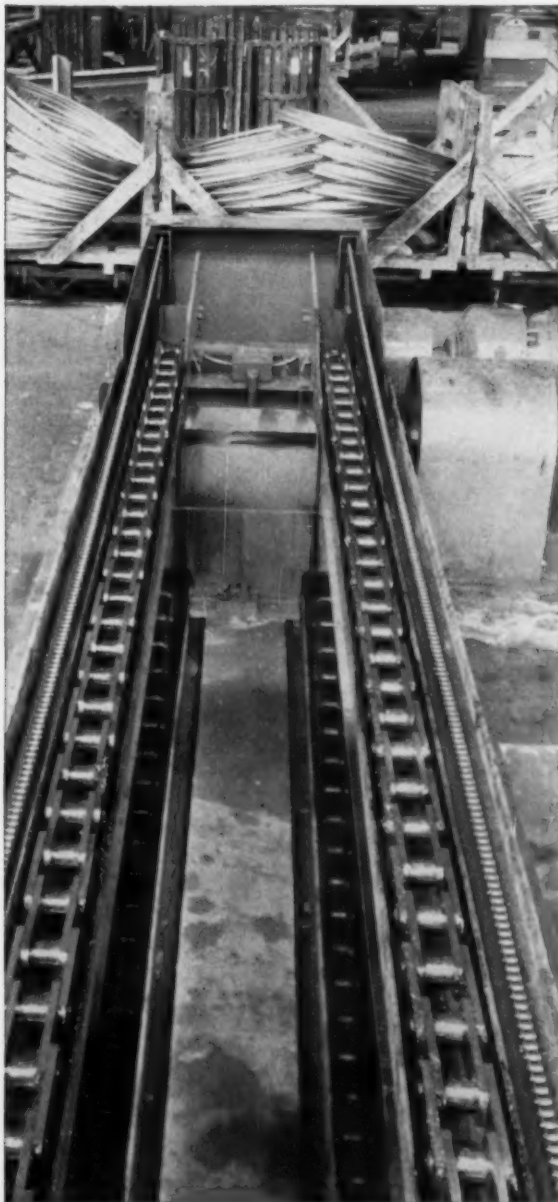
For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

GARLOCK



*Packings, Gaskets, Oil Seals, Mechanical Seals,
Plastic Products, Molded and Extruded Rubber*

Link-Belt draw bench chains hold accurate pitch and sprocket contact



LINK-BELT 6-IN. PITCH SS-1326 CHAIN operates at speeds up to 400 feet per minute. Note strands of Link-Belt RC-80 roller chain which serve to return the gripper head back to the die stand so that another draw can be made.

Double strand SS-1326 bushed chain accommodates high operating speeds

This bushed type chain draws from one to five 130-ft. tubes at speeds up to 400 feet per minute on this 36,000-lb. draw bench. Design and structural features of Link-Belt SS class bushed chain make such high speeds possible.

Bushings perform operational function

Chain bushings play a major role in the operation of dual-chain draw benches. They engage a pair of pivoted hooks connected to the gripper head. The chain then pulls the gripper head and tubes through

the die stand. When the draw is completed, the hooks are cammed away from the chain and the chain continues to operate.

Structural advantages of bushed chain

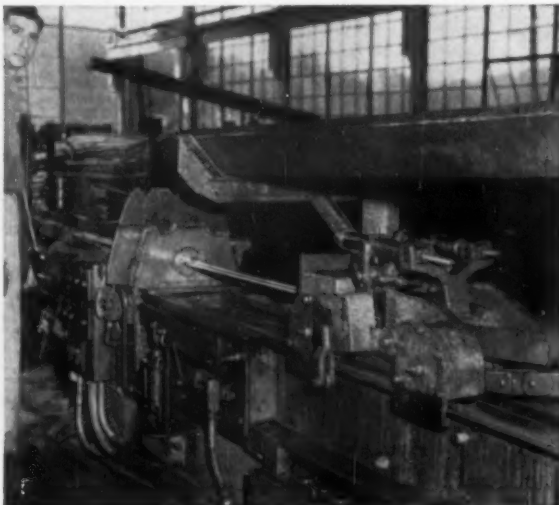
Link-Belt SS class chain also offers rugged construction. The hardened steel bushings, securely fitted and locked in sidebars, give a durability and strength that permit even higher operating speeds than are possible with standard block chain.

Special machining of parts extends life of this draw bench chain

Whether it's for a 5000- or a 100,000-lb. bench, Link-Belt draw bench chains are built to last. Parts are accurately machined after hardening by a special process that assures longer chain life on even the highest chain pull applications.

SS class draw bench chains are available in a variety of

itches and strengths to suit any requirement. They are of all-steel construction, and well balanced. They are furnished in either bushed type or block link design. Close pitch control and correct sprocket contacting surfaces are maintained at all times.



LINK-BELT SS-1325 CHAIN, 130 ft. long, is used on each of four draw benches in this copper tubing redrawing plant. Accurate control of raw materials and manufacturing processes is your assurance of close pitch and correct sprocket contact.

HEADQUARTERS for chains, sprockets and other Link-Belt conveying and mechanical power transmission products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

LINK-BELT

CHAINS AND SPROCKETS

At Campbell, Wyant and Cannon—

Quality Control of camshafts starts with HANNA PIG IRON

Campbell, Wyant and Cannon Foundry Company, division of Textron, Inc., has long been one of the world's leading suppliers of automotive castings. And throughout their many years of pioneering in metallurgy and foundry practice, Campbell, Wyant and Cannon has been a regular user of Hanna pig iron—both standard and silvery.

Typical of C.W.C.'s precision production in volume at their Muskegon, Michigan, foundry are cast camshafts, which were first introduced by C.W.C. to the automotive industry 25 years ago and are now used throughout the world.

Customers' specifications for these camshafts are extremely precise. Dimension, composition, including chemistry and metallurgical structure, hardness—all are vitally important.

In one of the many testing procedures employed to assure that casting quality is up to specifications, C.W.C. through the use of a direct reading spectrometer determines approximately every 20 minutes the analysis of samples taken from electric furnaces and ladles. The commercial application of spectrographic analysis of metals in the foundry was first worked out by C.W.C. in conjunction with the University of Michigan. Only metal made with pig iron of accurate analysis and superior uniformity, like Hanna pig iron, can pass this exacting quality control check.

Hanna produces all regular grades of pig iron as well as HannaTite and Hanna Silvery. All grades are available in the 38-lb. pig and the smaller HannaTen 12½-lb. ingot. Your Hanna representative will be pleased to tell you more about the advantages of using Hanna pig iron.



At 20-minute intervals, C.W.C. checks metal analyses with a direct reading spectrometer.

THE HANNA FURNACE CORPORATION

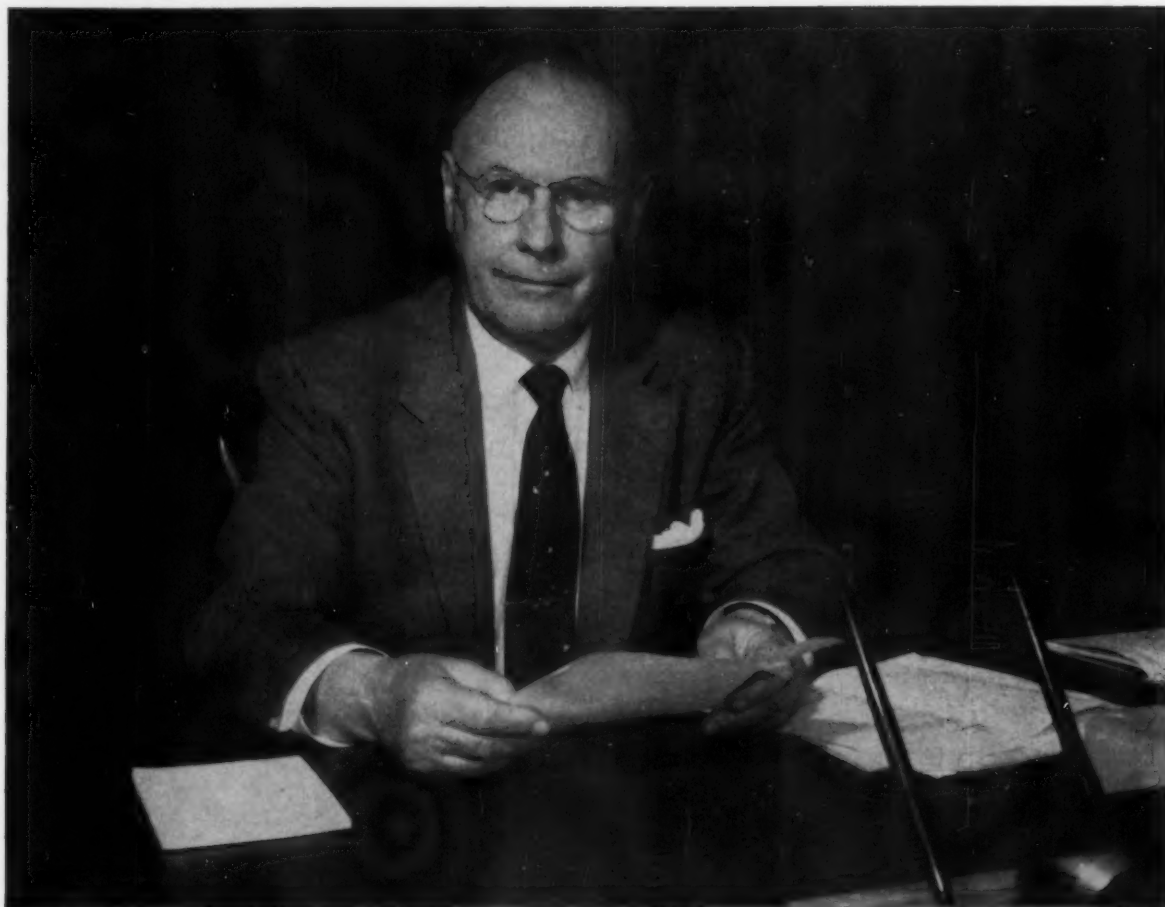
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of

NATIONAL STEEL CORPORATION



A few of the 50 million camshafts produced by Campbell, Wyant and Cannon Foundry Company.





WHY ARMAND LABBE CAME TO ALBANY...

Recently, Armand L. Labbe joined the staff of the Industrial Fabric Division of Albany Felt Company as industrial consultant on problems concerning smoke and dust control and other phases of dry filtration. The reason: *to help you find solutions to difficulties in these important areas!*

Considered one of the nation's foremost authorities on smoke and dust control in mining and quarrying, smelting, metal-working, chemical and allied industries, Mr. Labbe recently retired from his position of metallurgist with the Amer-

ican Smelting and Refining Company, after 45 years of service with that firm. In his new capacity, his wealth of experience and background will be available to help you solve dust, smoke and other filtration problems, as time permits.

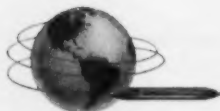
Albany Felt Company is one of the world's largest manufacturers of special industrial fabrics for wet and dry filtration, finishing and specialized conveying. Please write today for further information on the many custom fabrics and products which are available to meet your requirements more efficiently and economically!

ALBANY

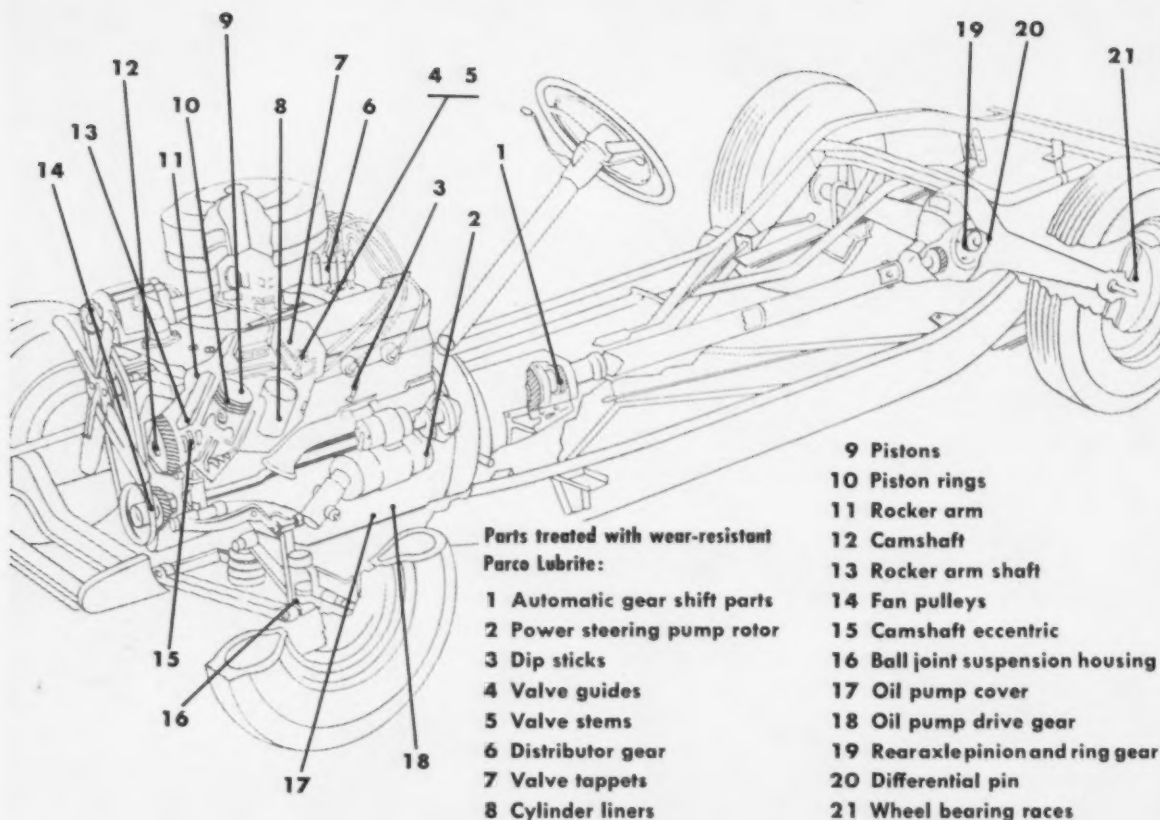
FELT COMPANY

ALBANY, N. Y.

INDUSTRIAL
F A B R I C
D I V I S I O N



THE WORLD'S FOREMOST PRODUCER OF CUSTOM FABRICS FOR INDUSTRY



Parts treated with wear-resistant Parco Lubrite:

- 1 Automatic gear shift parts
- 2 Power steering pump rotor
- 3 Dip sticks
- 4 Valve guides
- 5 Valve stems
- 6 Distributor gear
- 7 Valve tappets
- 8 Cylinder liners

- 9 Pistons
- 10 Piston rings
- 11 Rocker arm
- 12 Camshaft
- 13 Rocker arm shaft
- 14 Fan pulleys
- 15 Camshaft eccentric
- 16 Ball joint suspension housing
- 17 Oil pump cover
- 18 Oil pump drive gear
- 19 Rear axle pinion and ring gear
- 20 Differential pin
- 21 Wheel bearing races

The automotive industry shows how to save money by using Parco Lubrite

Wearing surfaces—the vital parts that move or roll or slide against each other—can cost the manufacturer far more than their original price.

If one of them fails prematurely in use, because of improper break-in, there's the cost of replacement, the field service charge, and the customer's ill-will to be reckoned with.

To promote smooth, safe initial operation, to prevent galling, scoring and welding, and to lengthen subsequent life, friction parts should be treated with Parco Lubrite.

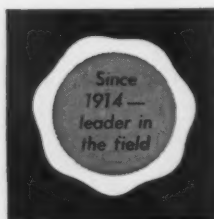
This nonmetallic, oil-holding coating eliminates metal-to-metal contact during wearing-

in, keeps a film of lubricant between bearing surfaces, provides priceless protection for fractions of pennies.

Automobile manufacturers have cut field service costs by the use of Parco Lubrite. How about *your* product? Let the Parker technical representative investigate for savings!

DETAILED TECHNICAL INFORMATION

Technical bulletin, with photomicrographs and data, on Parco Lubrite wear-resistant coatings. Send for it. It's free.



PARKER

2197 E. MILWAUKEE, DETROIT 11, MICH.

BONDERITE
corrosion resistant
paint base

BONDERITE and BONDERLUBE
aids in cold forming
of metals

PARCO COMPOUND
rust resistant

PARCO LUBRITE
wear resistant for friction
surfaces

TROPICAL
heavy duty maintenance
paints since 1883

*Bonderite, Bonderlube, Parco, Parco Lubrite, Parker Pre-Namel—Reg. U.S. Pat. Off.

Announcing

NEW SOURCE

for

stainless

steel

wire

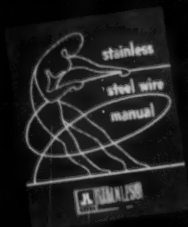
J & L Stainless Steel Division's New Wire Mill Offers Wide Range of Wire Sizes

The increasing use of stainless steel wire in new product development, old product improvement and for experimental purposes has placed a new responsibility on the manufacturer of quality stainless steel.

To meet this growing need, J & L Stainless Steel Division is pleased to announce the opening of

its new wire mill . . . to make available stainless wire in a wide range of sizes, finishes and coatings.

For data regarding wire, its properties and uses, consult our Stainless Steel Wire Manual. For special applications write in detail giving complete information about your requirements.



Wire now for your copy
of J & L's new Stainless
Steel Wire Manual.

Improve your Products with . . .



STAINLESS

STEEL

BAR • WIRE • SHEET • STRIP

Jones & Laughlin Steel Corporation • STAINLESS STEEL DIVISION • Box 4606, Detroit 34

THE ALUMINUM MAN...His handrail pipe wins hands down

Handrails are seen almost everywhere, but until Alcoa introduced aluminum handrail pipe nobody had ever seen or heard of handrail that was both inexpensive and maintenance-free. Alcoa® Aluminum Handrail Pipe is heads above older pipe materials because it resists corrosion, has a lustrous natural finish, needs

no painting, and lasts and lasts with little or no upkeep. *The Aluminum Man* stocks Alcoa Handrail Pipe for immediate delivery in any quantity. Call him today. Fast service and technical assistance are available to you whether you need a few pounds or a few thousand pounds of Alcoa Aluminum.

CALL THE ALUMINUM MAN

He's your Alcoa Distributor Salesman for sheet, tube, shapes, and other Alcoa Mill Products



ALABAMA
Birmingham
Hinkle Supply Co., Inc.

ARIZONA
Phoenix
Ducommun Metals & Supply Co.

CALIFORNIA
Berkeley
Ducommun Metals & Supply Co.

Los Angeles
Ducommun Metals & Supply Co.

Pacific Metals
Company, Ltd.

San Diego
Ducommun Metals & Supply Co.

San Francisco
Pacific Metals
Company, Ltd.

COLORADO
Denver
Marsh Steel Corp.
Metal Goods Corp.

CONNECTICUT
Milford
Edgcomb Steel of
New England, Inc.

Windsor
Whitehead Metal
Products Co., Inc.

FLORIDA
Jacksonville
The J. M. Tull Metal & Supply Co., Inc.

Miami
The J. M. Tull Metal & Supply Co., Inc.

IDAHO
Boise
Pacific Metal Co.

ILLINOIS
Chicago
Central Steel & Wire Company

The Corey Steel Co.
Steel Sales Corp.

INDIANA
Indianapolis
Steel Sales Co.
of Indiana, Inc.

KANSAS
Wichita
Marsh Steel Corp.
Metal Goods Corp.

KENTUCKY
Louisville
Williams & Co., Inc.

LOUISIANA
New Orleans
Metal Goods Corp.

MARYLAND
Baltimore
Whitehead Metal
Products Co., Inc.

MASSACHUSETTS
Cambridge
Austin-Hastings Co., Inc.

Whitehead Metal
Products Co., Inc.

Roxbury
Eastern Metal Mill
Products Company

MICHIGAN
Detroit
Central Steel & Wire Company

Steel Sales Co. of
Michigan

MINNESOTA
Minneapolis
Steel Sales Co. of
Minnesota

MISSOURI
Kansas City, North
Marsh Steel Corp.

Metal Goods Corp.
St. Louis
Metal Goods Corp.

St. Louis
Metal Goods Corp.
Steel Sales Co. of
Missouri, Inc.

NEW HAMPSHIRE
Nashua
Edgcomb Steel of
New England, Inc.

NEW JERSEY
Harrison
Whitehead Metal
Products Co., Inc.

Hillside
Miller Steel Co., Inc.

Kenilworth
Jones & Laughlin
Steel Corp.

NEW YORK
Albany
Eastern Metals
Warehouse, Inc.

Buffalo
Brace-Mueller-
Huntley, Inc.

Whitehead Metal
Products Co., Inc.

New York
(L.I. City) Adam Metal
Supply, Inc.

Henry B. Lust (circles)
Manhattan Brass & Copper Co.

Strahs Aluminum
Company, Inc.

Metal Supply, Inc.
Sachs Metal Supply Co.

Syracuse
Brace-Mueller-
Huntley, Inc.

Whitehead Metal
Products Co., Inc.

NORTH CAROLINA
Charlotte
Edgcomb Steel Co.

OHIO
Cincinnati
Central Steel & Wire Co.

Williams & Co., Inc.
Cleveland
Nottingham Steel
and Aluminum Co.

Williams & Co., Inc.
Columbus
Williams & Co., Inc.

Dayton
Ohio Metal & Manufacturing Co.

Toledo
Williams & Co., Inc.

OKLAHOMA
Tulsa
Metal Goods Corp.

OREGON
Portland
Pacific Metal Co.

PENNSYLVANIA
Philadelphia
Edgcomb Steel Co.

Metal Supply Co.
Whitehead Metal
Products Co., Inc.

Pittsburgh
Williams & Co., Inc.

York
Edgcomb Steel Co.

RHODE ISLAND
Pawtucket
Edgcomb Steel of
New England, Inc.

TENNESSEE
Memphis
Metal Goods Corp.

TEXAS
Dallas
Metal Goods Corp.

Houston
Metal Goods Corp.

UTAH
Salt Lake City
Pacific Metals
Company, Ltd.

WASHINGTON
Seattle
Pacific Metal Co.

WISCONSIN
Milwaukee
Central Steel & Wire Company

Steel Sales Co. of
Wisconsin



Aluminum Products—Hawaii, Honolulu 14, HAWAII

Aluminum Company of America, 958-D Alcoa Building, Pittsburgh 19, Pennsylvania



"We get ten refrigerator pans a minute...

from one press and with one attendant!" From its motorized coil cradle to its mechanized conveyer, this is a truly automated production unit. Coil stock feeds through the press' seven transfer stations...is easily formed and drawn into deep drawn refrigerator pans. Bliss engineers design and build entire systems like these, including the dies.

Can a transfer feed press work for you? Best way to find out is to ask—ask the people who introduced them in the nineties and have pioneered in their improvement since.



E. W. BLISS COMPANY • Canton, Ohio

BLISS is more than a name... it's a guarantee

PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

**Some day every good lathe
will feature**



CONSTANT SURFACE CUTTING SPEED

These Monarch Lathes have it now!

Monarch Series EE—Model 1000. **1.**

Monarch Model 21 Monomatic. **2.**

Monarch Right Angle Lathe—Model F. **3.**

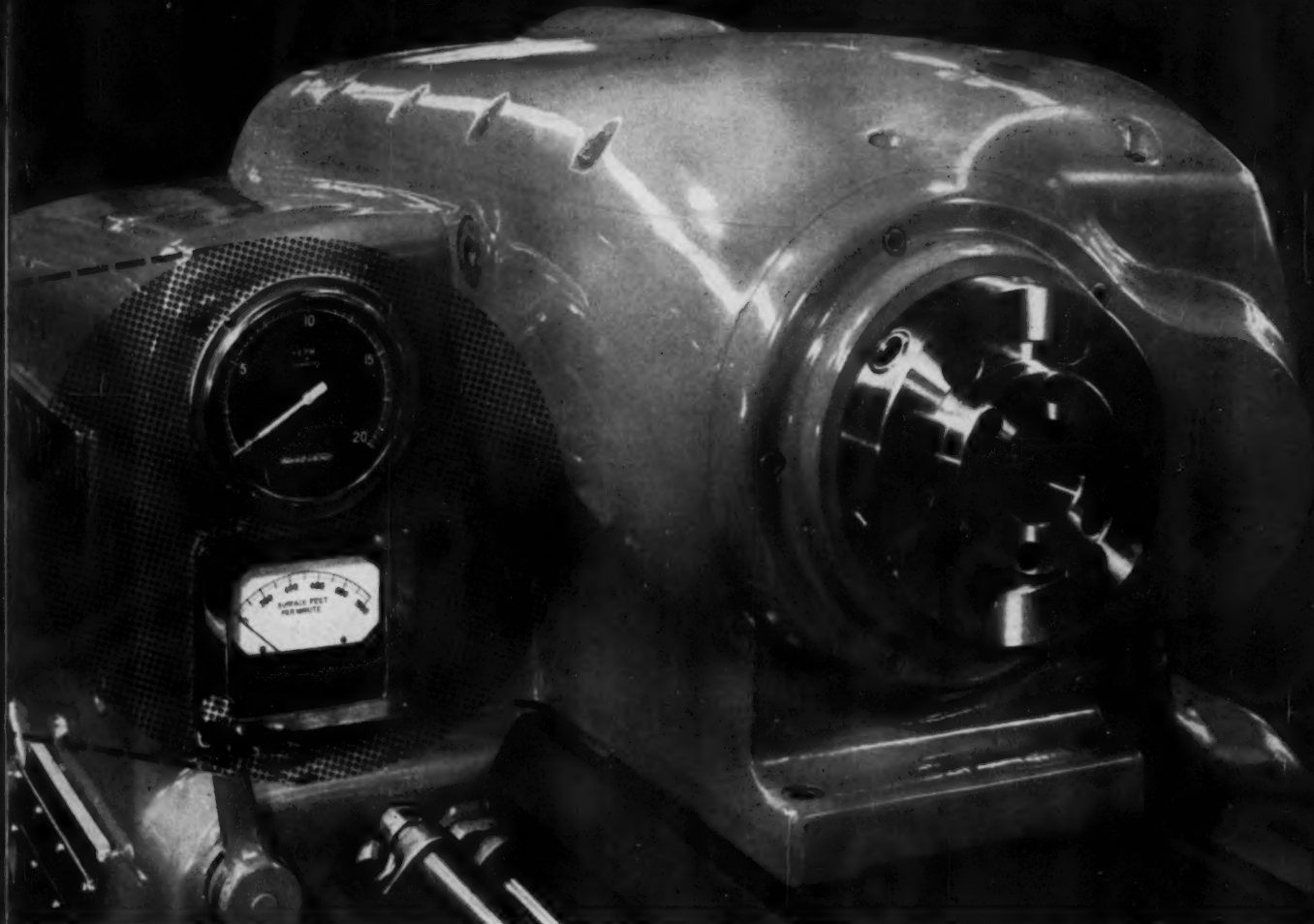
Series 61 Engine and Toolmaker's
Models M, N and NN Heavy Duty } **On
special
order**

Why buy obsolescence? Why buy a lathe that cut after cut, day after day can't deliver the full metal removing capacity built into it? Why buy anything less than optimum turning for today and tomorrow, both? Why buy less than Monarch?

There are plenty of reasons why you can bet on Constant Surface Cutting Speed. You've got your machine at full load throughout the cycle, increasing output from 30 to 40% on production shaft work—more on facing cuts and forgings. You're getting up to 50% more tool life, avoiding both the tool life loss of excessive speeds and the tool breakage and work distortion resulting from the increased tool forces caused by low speeds. And naturally, you get better finish and reduced power requirements.

Constant Surface Cutting Speed is the coming thing by all the laws of common sense and economics! Buy it now—buy it ahead—with Monarch . . . *The Monarch Machine Tool Company, Sidney, Ohio.*



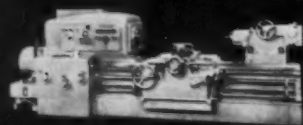


MONARCH DYNA-SHIFT LATHES

While Dyna-Shift construction does not provide Constant Surface Cutting Speed as such, it's a close approach to such an ideal—with less initial investment. Surface speeds are selected—or preselected—by dial. There is a much greater range and number of speeds. Speed shift is a matter of seconds and it's both automatic and foolproof. Look into the Dyna-Shift—with the headstock that thinks!



Monarch Series 62 Preselector Dyna-Shift



Monarch Series 80 Heavy Duty Dyna-Shift



Monarch Series 90 Heavy Duty Dyna-Shift



*"We've practically eliminated off-grade heats
with MANTEMP ferromanganese"*

An almost foolproof way to hit open-hearth manganese specifications consistently is with ladle additions of MANTEMP ferromanganese. Mill superintendents have reported that the alloy yields high recoveries and allows substantial reductions in overall ingot costs.

Fine grain size specifications can also be met easily because MANTEMP ferromanganese does not preferentially oxidize separately added aluminum. The alloy is available in both high- and medium-carbon grades, packed in cans containing exactly 40 pounds of manganese.

ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.

For further information, write for this new six-page MANTEMP ferromanganese bulletin.

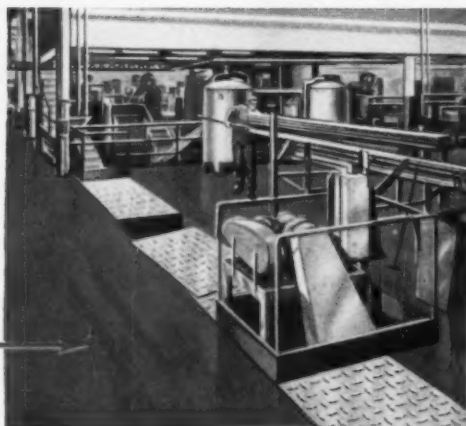


Electromet
FERRO-ALLOYS AND METALS

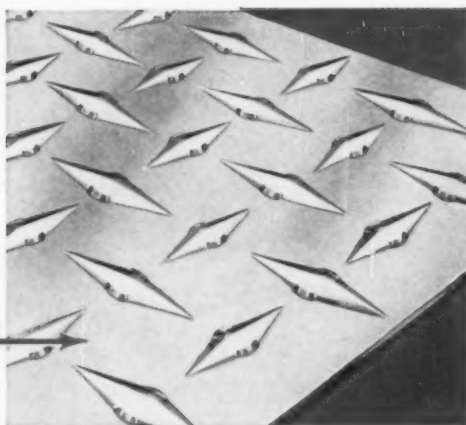


The terms "Mantemp," "Electromet," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

If your plant requires a
non-sparking, rustproof flooring
in areas like this...



and you want
the finest quality
aluminum treadplate...



Get it fast—and
cut to size from your

REYNOLDS DISTRIBUTOR

Look under "Aluminum" in the classified phone book for your Reynolds Distributor

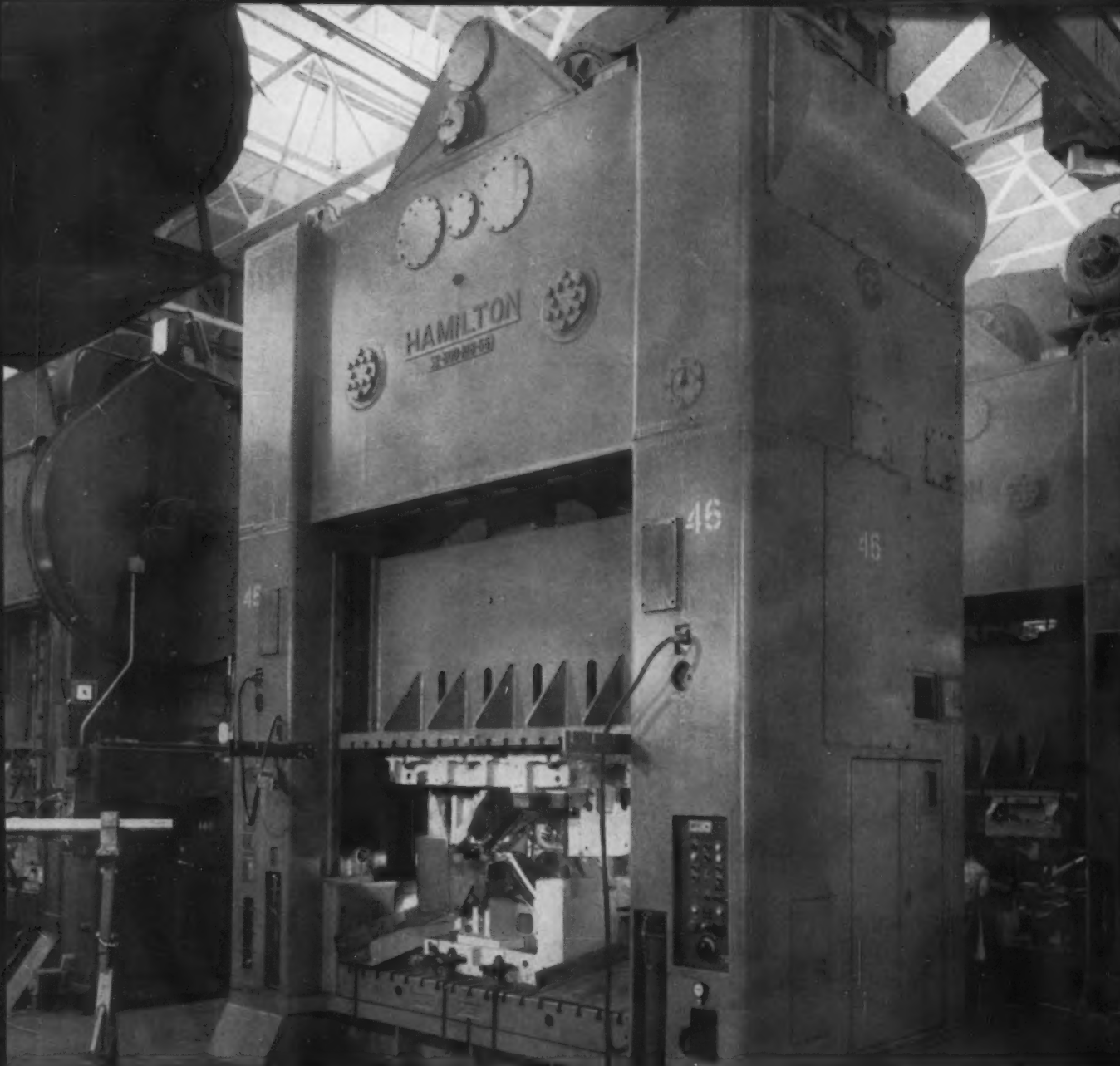
Reynolds Metals Company, Louisville 1, Kentucky

The Finest Products
Made with Aluminum

are made with
REYNOLDS ALUMINUM

and the finest warehouse service
is provided by your
REYNOLDS DISTRIBUTOR

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV



This versatile 600-ton Hamilton Eccentric Gear Press is currently turning out a wide variety of parts in a major automobile plant in Detroit.

Why an eccentric gear press?

Hamilton Eccentric Gear Presses are ideally suited for heavy duty operations—particularly deep draws and other stamping operations where the tonnage is encountered well up on the stroke.

The eccentric and gear are integral and rotate on

a short eccentric pin, as a result of which torsional and bending loads are negligible.

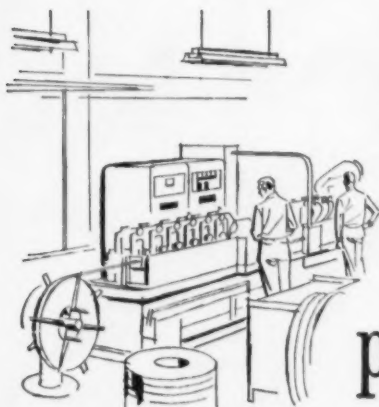
The many added features of Hamilton Eccentric Gear Presses guarantee greater production, improved stamping quality, and lower maintenance costs.

Write to Dept. 2D for Bulletin #13301, describing these machines

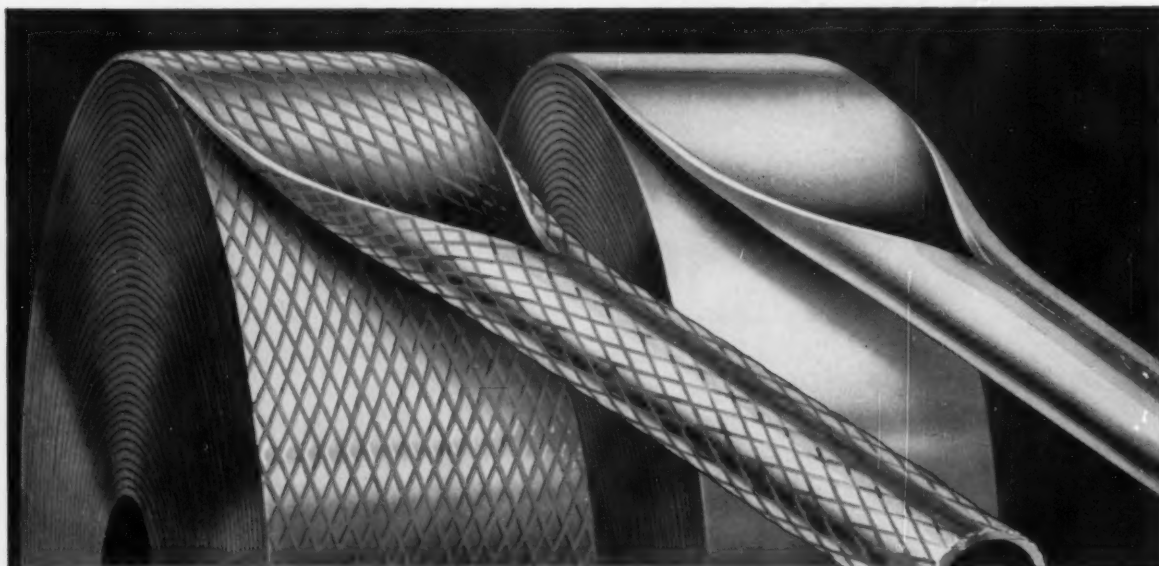
Hamilton Division Hamilton, Ohio
BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools





Now... Aluminum Tubing... plain or patterned...Welded with TOCCO* High-Frequency Heating



Quaker State Metals Company, leading fabricator of aluminum building products, recently installed a 25 kw, 450,000 cycle TOCCOtron vacuum tube oscillator for continuous welding of aluminum tubing. Both plain and patterned strip, anodized or untreated according to end-use requirements, is continuously welded. Diameters vary from 1/2" to 1" O. D. and wall thicknesses from .024 to .064".

The weld is absolutely uniform throughout the entire length, assuring a dependable, strong bond. The whole operation is so smooth and quiet, you hardly know it's running.

Aside from the perfect weld, for the ultimate in product quality, TOCCO Induction Welding, being a completely automatic process, saves time and money over many conventional joining methods.

Remember, whether your products are of ferrous

or non-ferrous metals, TOCCO can almost certainly save you time and money in heat-treating, brazing, welding, or hot forming operations.



TOCCO

Mail Coupon Today—NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. A-4, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Heating".

Name

Position

Company

Address

City Zone State



RESERVED

If you had your own steel mill, you could be sure of getting all the steel you need in peak demand periods, and you'd never have cash tied up in excessively large, costly-to-carry inventories. That's why Carpenter's new plan is . . .

like having your own steel mill

Here's a new solution to your steel inventory problems. This new plan lets you *reserve mill output ahead of time*.

It means:

- 1.** *You don't have to carry more inventory than your rate of production dictates.* Result: your inventory expenses are always at a minimum. Cash that would ordinarily be tied up in inventories during low demand periods is free, when it can be most advantageously used.
- 2.** *You have an assured supply of steel in peak demand periods.* Emergencies won't change the picture, because, under Carpenter's new plan, the mill carries extra large stocks of semi-finished steel in reserve. And if you order steel out of local warehouse stocks, this same plan assures continuous, dependable deliveries.

Increased capacity at Carpenter makes this new plan possible. Through the acquisition of electric furnace steelmaking facilities in New England, Carpenter has virtually doubled previous capacity.

Today, while we're implementing this new service, is the time to go along with us. By acting now, you assure yourself of a steady supply of Carpenter top quality Tool, Stainless and Alloy steels right through the next period of peak demand. Moreover, we can offer this plan to *more* steel users than we've ever served before!

This is our vote of confidence in your future. It's one more example of a forward-thinking program of Carpenter service designed with your needs in mind.



The Carpenter Steel Company, Main Office and Mills, Reading, Pa.

Alloy Tube Division, Union, N. J.

Carpenter Steel of New England, Inc., Bridgeport, Conn.

Webb Wire Division, New Brunswick, N. J.

COMPARISON CHART

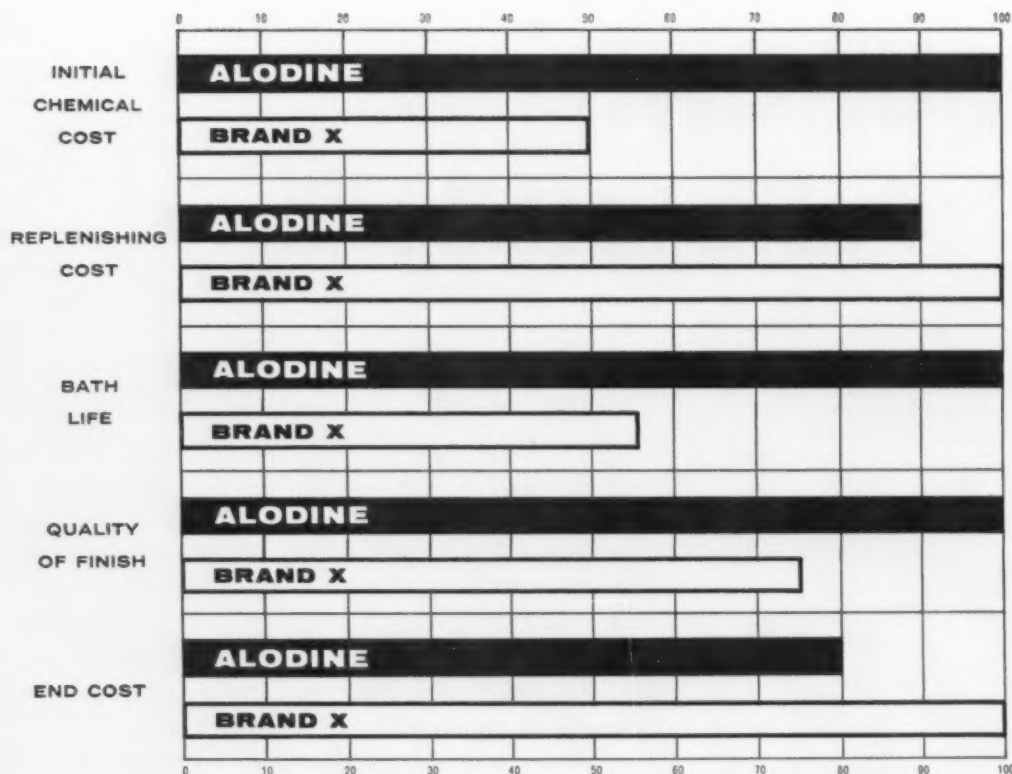
ACP ALODINE

VS.

A Recognized Competitive Brand

Proving that you get what you pay for—

ACP ALODINE is less expensive in the long run



YOU GET WHAT YOU PAY FOR... *even in chemical treatment processes*

An excellent example of this came to our attention recently. Originally a company treating aluminum purchased a chemical treatment process on initial chemical cost alone—saved 50% in this way. Since installing ALODINE, final costs have shown a decrease of 20%. Bath replacement, supervision and process control, and maintenance costs have all been materially reduced.

And the quality of the finish has been greatly improved.

Perhaps an analysis of your treatment costs will be equally enlightening. Our technical representatives would be glad to make such a study of your system. Of course you would be under no obligation. For their assistance, contact us at Ambler.

ALODINE is a registered trademark of American Chemical Paint Company

AMERICAN CHEMICAL PAINT COMPANY, Ambler 20, Pa.

DETROIT, MICH.

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New Chemical Horizons for Industry and Agriculture



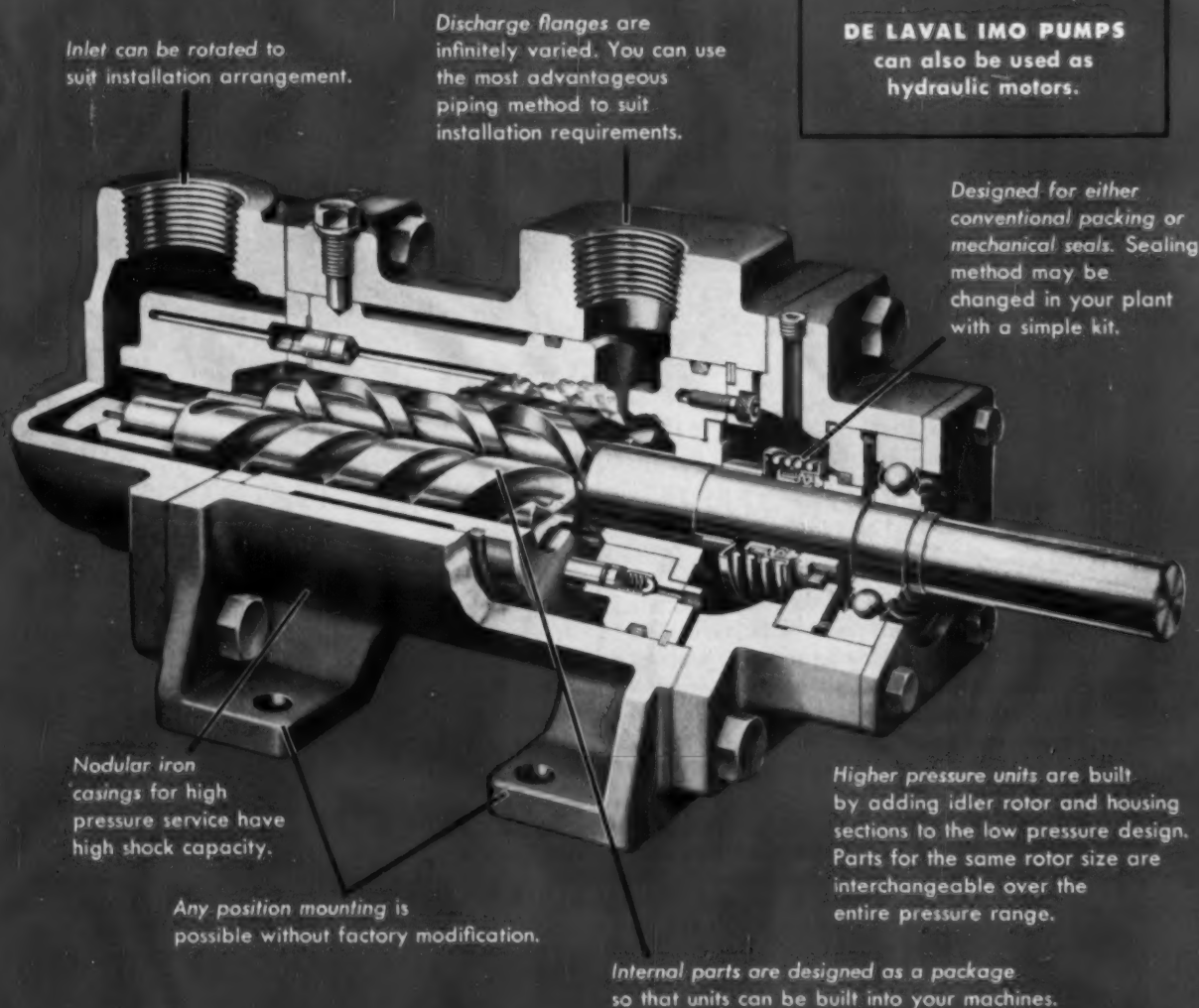
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IMO PUMPS

are now more versatile than ever

De Laval IMO pumps have proved that they do a dependable job over long years of service. The reason is IMO design simplicity. These constant displacement rotary pumps have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. *Quiet*, compact IMO pumps are excellent for direct-connected, high-speed operation.

In addition to these basic pumping advantages, the improved IMO gives you important new benefits shown in the cutaway illustration below.



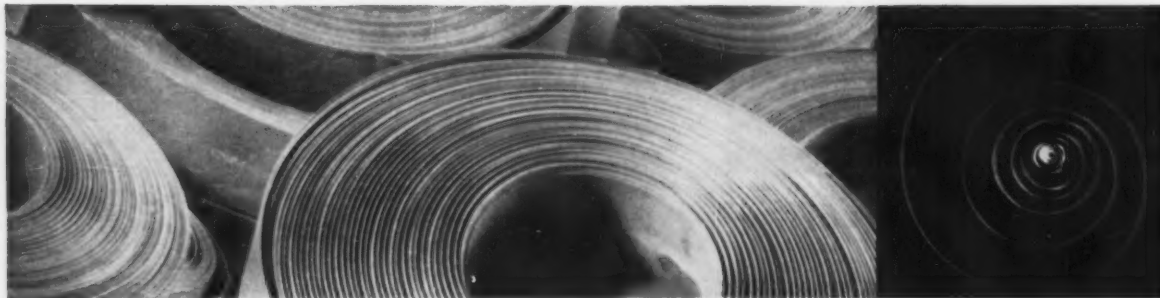
Bulletin 3001 gives data on improved De Laval IMO pumps. Send for your copy today.



DE LAVAL IMO Pumps

DE LAVAL STEAM TURBINE COMPANY

899 Nottingham Way, Trenton 2, New Jersey

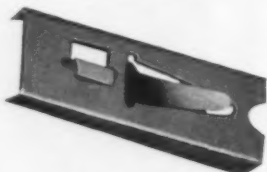


How they're using Wallace Barnes Cold-rolled Specialty Steels



1. In Three Drawing Stations

The part shown in illustration one was made from .59 - .74% carbon steel in three drawing stations. From .70 - .80% carbon, this piece should have four or five drawing stations. The piece could be made from .90 - 1.05% carbon, but would require seven drawing stations with fully annealed steel.



2. Blanked on 45° Angle

The stamping shown in the second illustration was made from .70 - .80% carbon spring steel. It was blanked and pierced on a 45° angle, with small holes pierced to prevent fracture in later forming and bending. It was then given severe secondary forming. The small tab shows "orange peel" and probable fracture would occur if the part were formed from .90 - 1.05% carbon.



3. All Flanging One Operation

Our third part is a gun stamping made from .70 - .80% carbon with a sharp bend with the grain in one stroke of the press. Higher carbon will fracture due to its less ductile qualities.



4. Thirteen Steps Progressive

The fastener shown in the fourth illustration was made from the .59 - .74% carbon steel, the only spring steel which would take the bends and draws to which it is subjected here. All the higher carbon steels were rejected because they failed under the cold-work necessary to produce the two small extrusions. It took seven reductions to bring these extrusions within tolerance. There were thirteen steps total in the progressive die.

These examples show how proper steel selection may save operations and insure satisfactory performance. Among the many sizes and types of Wallace Barnes cold-rolled specialty steels is the right one for your application. Send for "Physical Property Charts" giving tensile strength and forming properties of Wallace Barnes tempered steels.

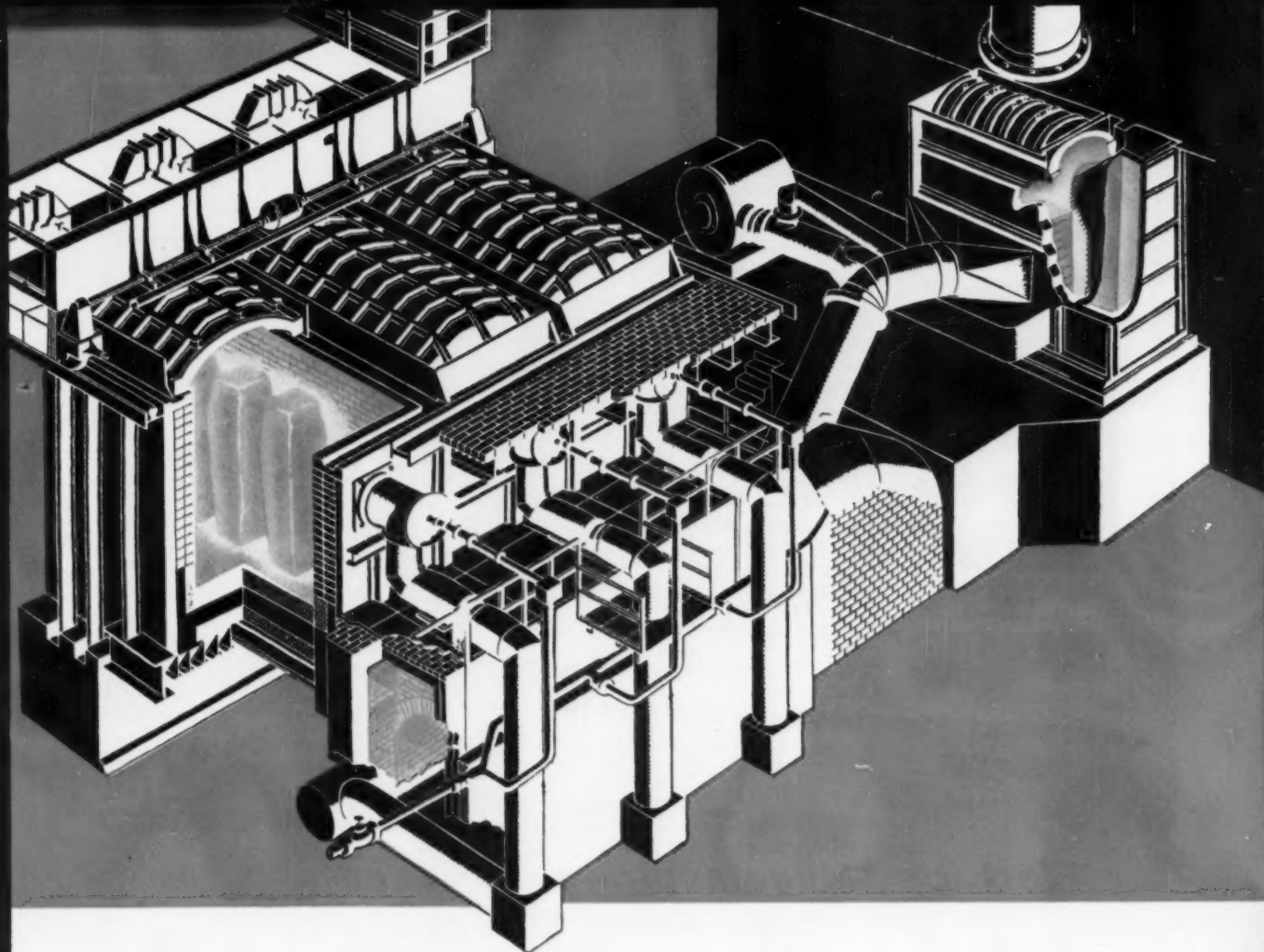
Wallace Barnes Steel Division

Bristol, Connecticut



**Associated Spring
Corporation**

8008



Ingot heating is fast and uniform in Salem-Brosius soaking pits



This massive steel mill slab heating furnace is another specialty of Salem-Brosius.

This battery of Salem-Brosius rectangular soaking pits currently is in round-the-clock operation heating ingots in a large steel mill. Of this installation, a top operating official said: "These pits are heating more steel ingots ready for rolling with less fuel consumption, less maintenance costs, and better temperature uniformity than any other type of pit in our plant."

Reports like this are typical, not only about these rectangular soaking pits, but all Salem-Brosius furnaces. Salem-Brosius engineers possess an enviable record for designing furnaces that produce maximum, high-quality output at minimum operating cost. If your plans call for soaking pits or any heating or heat-treating furnaces, send us an inquiry. There will be no obligation.

SALEM-BROSIUS, INC.

CARNEGIE, PENNSYLVANIA

In Canada: Salem Engineering Limited • 1525 Bloor Street West, Toronto 9, Ontario

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YOU CALL...WE'LL COME WITH TECHNICAL HELP

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Specialty steels—carbon, alloy and stainless—are areas of the metals business in which our experience could prove invaluable to you. We can work with you to determine which steels are best suited for your requirements. We've

made detailed studies of strength, hardness and microstructure of metals. You'll find us adept in many of these skills.

Or maybe you'd like to know something of the men who make our steel? Our facilities? Our tests for quality? Our packaging and loading? The Byers metallurgist has these answers. Ask him to call, soon. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

A growth company with the emphasis on quality and service **A. M. BYERS COMPANY**

YOUNGSTOWN SHEETS AND STRIP

Speed-Up Toughest Deep-Drawing Operations



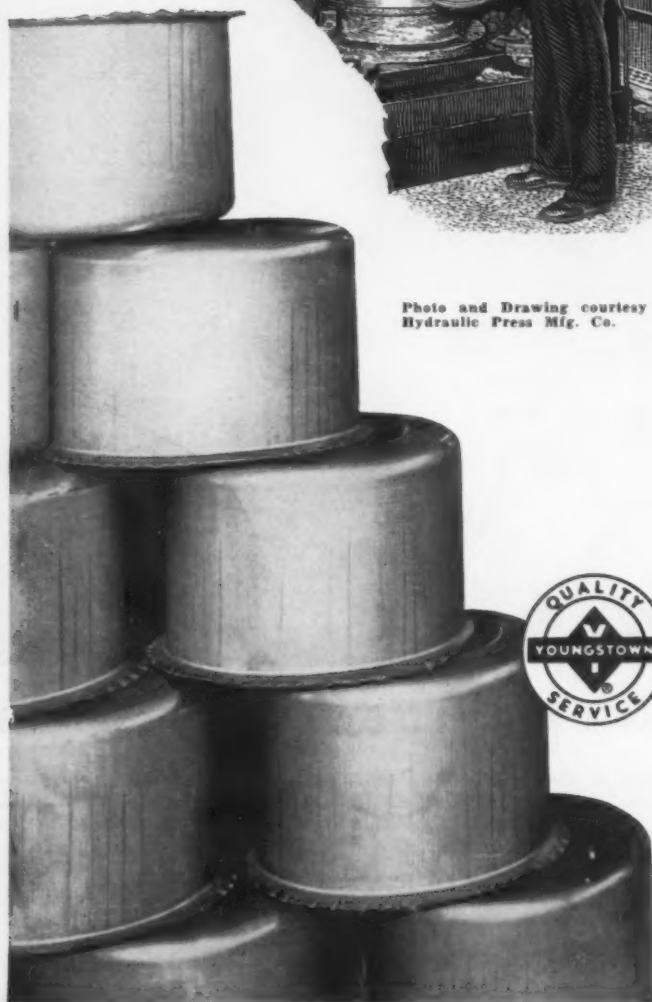
Photo and Drawing courtesy of
Hydraulic Press Mfg. Co.

Modern high-speed precision drawing and stamping operations require only the highest quality steel if top production - low reject rates are to be maintained on difficult-to-run parts. And the highest quality steel produced anywhere is Youngstown Sheets and Strip.

Our satisfied customers, across the nation, tell us time and time again: "Our production is increasing—Rejects falling off—Fabrication costs are down." Why not make Youngstown your regular sheet and strip specification from now on—for improving both product quality and the overall profit picture.

When you use Youngstown Sheets and Strip you can be sure metallurgical quality will never vary because they are produced by steelmakers—with over 56 years experience—using only the most scientific quality control techniques. This guarantees a proper blending of the required ductility, tensile strength, flatness and surface to meet your exact specifications.

Why not call or write your nearest Youngstown District Office, today, for metallurgical assistance or additional information—or write directly to our Home Office.



COLD ROLLED SHEETS AND STRIP

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yaloy Steel
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80-inch continuous hot strip mill

BLAW-KNOX CONTINUOUS HOT STRIP MILLS

Blaw-Knox designs and builds a full range of continuous, semi-continuous, and single stand reversing hot strip mills. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for fer-

rous and non-ferrous metals, iron, alloy iron and steel rolls, Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.



BLAW-KNOX COMPANY

*Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
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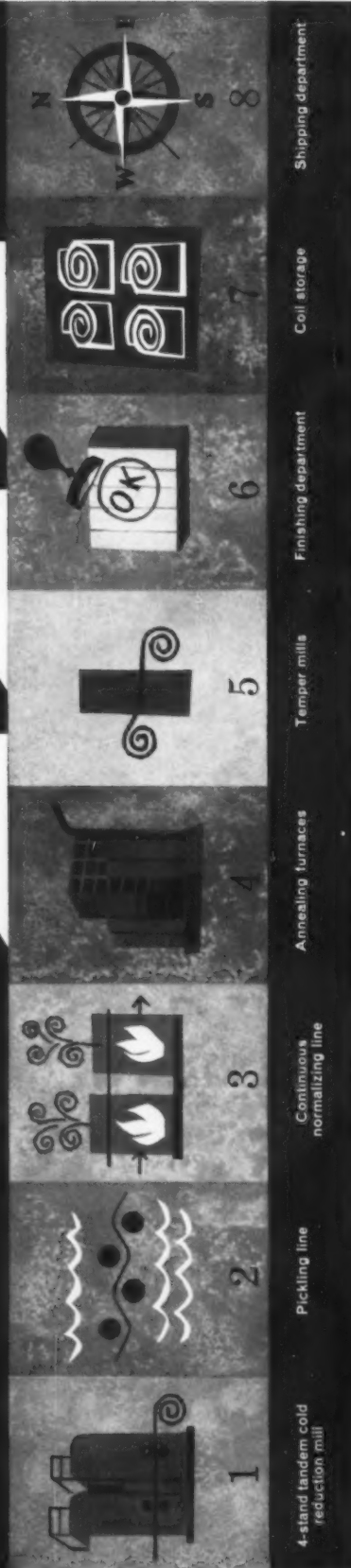
MEASURING UP TO YOUR FUTURE NEEDS...

Inland will soon provide a 50% increase in cold rolled sheet and strip capacity... By the end of the year, Inland will add close to a half million tons to its existing capacity for cold rolled sheet products. The increase in cold rolled sheet production was the main purpose behind Inland's current expansion program which will bring total yearly steel-making capacity up to 6,000,000 ingot tons next year.

The expansion project, launched in late 1955 and now nearing completion, is in keeping with Inland Steel's continuing policy of anticipating future needs of steel users in the fastest growing steel consuming area in the country... the Midwest.

Inland's new cold-rolled sheet mill, housing the most modern equipment available for the production of uniform, high quality cold-rolled sheets and coils, will be one of the fastest and most efficient mills of its type in existence.

New facilities will include:



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Plate Chromium Cold

Chromium plating in a cold electrolytic bath is a recent Russian development. Requiring about 25 pct of normal current density, the bath is triggered by an ammonium flouride catalyst. For efficiency, the sulphuric acid content of the catalyst must be kept low. Principal use for the process: plating large punch-and-die sets.

Anodizing Market Bright

Anodizing equipment is selling well in contrast to the general slump in plating machinery. Biggest users are the automotive industry and makers of architectural products. Auto design is trending sharply away from chrome brightwork; 1960 models will have very little. But the use of anodized aluminum on cars will grow steadily.

Mills Use More Hot Metal

Look for steel mills to continue using a lot of hot metal in furnace charges. It's cheaper than using scrap, the fully integrated mills feel, even though scrap prices are scraping bottom. Leading mills say they may go the rest of the year without buying scrap. Price cuts on foreign ores and steady prices on domestic ores also tend to boost the use of hot metal.

Navy Plans for New Tools

Some of the Government's machine-tool buying plans are coming to light. The Navy wants \$10.1 million in the new fiscal year to replace tools used for aircraft production. It also wants \$2.4 million to buy special tools and test facilities for two new missiles, and \$4 million for general purpose tools for aircraft testing programs.

X-Rays Measure Blind Spots

A new X-ray technique will measure internal dimensions and contours that can't be reached with conventional tools. Key item is a piece of lead sheet with a narrow slot to mask out all except one thin X-ray beam. The object to be inspected (plus the film) are swept through this

beam at a predetermined rate. Result: a sharp X-ray photo in an exact 1:1 ratio that can be magnified on an optical comparator for checking to within 0.0005 in.

Price Cuts Worry Treasury

U. S. Treasury experts are trying to decide whether cheaper aluminum will really benefit the Government. At first glance, the new lower prices would seem to indicate a saving to Uncle Sam in buying airframes and other aluminum products. On the other hand, lower prices for the metal may also mean reduced revenues from corporation taxes. Thus the price cuts could cost extra dollars.

Noisy but Useful

Exponents of cartridge-actuated devices say they can be used on any machine or piece of equipment that can be powered by either a sudden or gradual burst of energy. Concrete stud drivers and explosive metal forming are two uses already well advanced. Coming are truck jacks, fence-post drivers, parachute decelerators, deep-hole fertilizing machines, even small rockets.

Shows When Fatigue Starts

A simple new test uses pressure sensitive transparent tape to detect incipient fatigue in stressed specimens of aluminum alloys. Bubbles that are clearly visible to the naked eye appear under the tape even though actual fatigue cracks can only be detected with a microscope. Bubble forming tendency is somewhat less in cold rolled mild steel, and very slight in stainless. Seemingly, bubbles don't form at all in brass or zinc.

Photos Guide Flame Cutter

Photographic glass negatives made from drawings accurately guide a flame cutting machine which has two outriggers, each of which carries up to three burning heads. There is no other template preparation or plate layout. Multiple identical or mirror images can be cut simultaneously.

Farval lubrication first choice for Hill-Acme Upsetter

BUILDING peak performance into their machines is a point-of-pride with Hill-Acme. That's why you'll find Farval lubrication systems on H-A machines such as this upsetter.

When the going's rugged, with shock, vibration and wear trying to take their toll, Farval continuously guards 59 vital bearings... continuously delivers measured amounts of lubricant at regular intervals.

More and more, machine designers, engineers and production men are turning to Farval for the kind of lubrication that spells uninterrupted, maintenance-free production. Let us tell you more. Write for Bulletin 26-S. The Farval Corporation, 3282 East 80th Street, Cleveland 4, Ohio.

KEYS TO ADEQUATE LUBRICATION

Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.

*Affiliate of The Cleveland Worm & Gear Company,
Industrial Worm Gearing. In Canada: Peacock Brothers Limited.*

**FARVAL—Studies in
Centralized Lubrication
No. 218**



On this 1¼-inch Hill-Acme Upsetter, Farval's timing cycle can easily be changed to conform with the service of the machine. Amount of lubricant delivered to each bearing is also adjustable.



Automakers Say, "Sell," But Place Hopes on '59 Models

Auto industry is still convinced that old-fashioned selling is the only way out of the slump in auto sales.

But there is no way to avoid a bad year for 1958 models.

Hopes build up for better things with '59's.—By H. R. Neal.

■ All over the United States, auto dealers, individually and collectively, are staging life and death

sales schemes to revive sagging new car sales.

The Detroit Automobile Dealers Assn., for example, launched a sales drive March 29. Sales response was so strong the campaign closing was delayed from April 12 to 19.

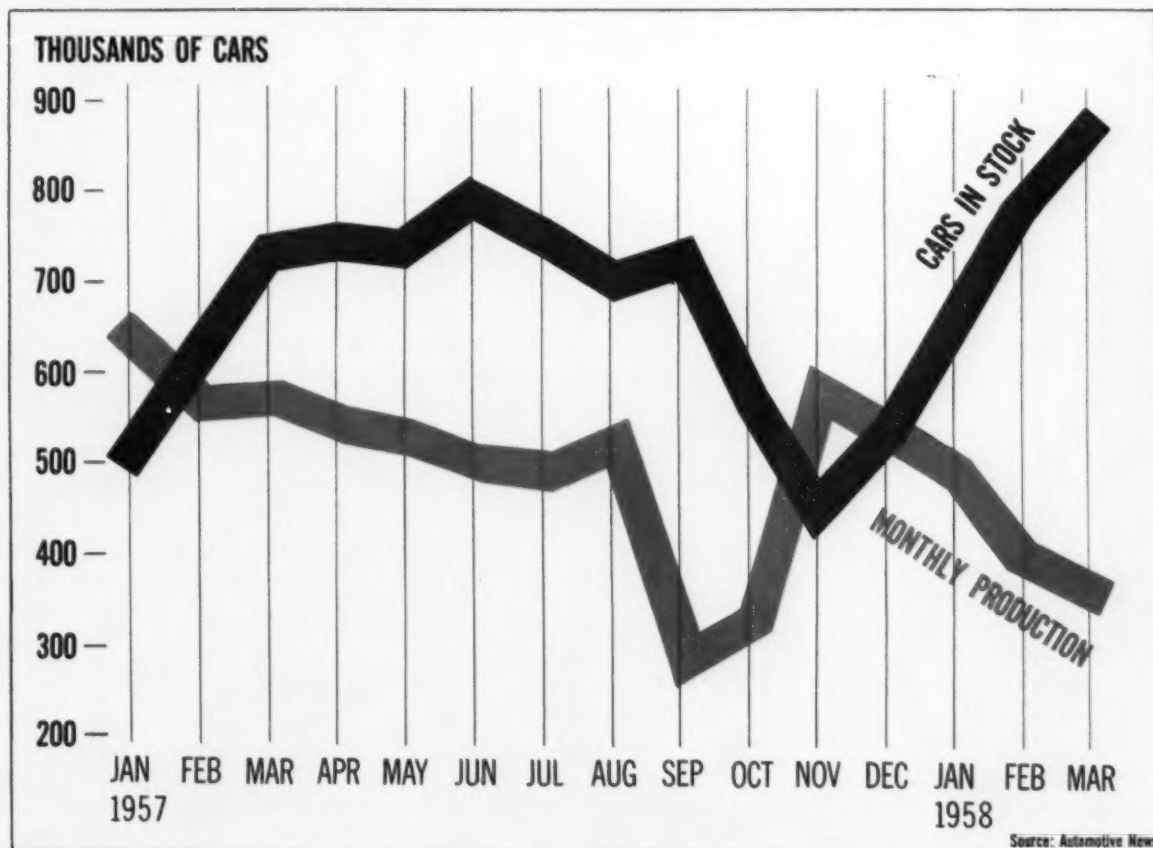
Saturation Sale — Newspapers, radio and television stations are saturating Detroit and the surrounding area with thousands of plugs proclaiming "Auto day means pay day—keep Detroit dynamic." In

the first week, sales plus orders for future delivery zoomed 60 pct ahead of the preceding week.

Nearly every company has a sales incentive program running for dealers and salesmen, and promotions aimed at getting customers into the showrooms. For salesmen and dealers, the rewards are money. For the customers, lures are gifts.

The Hard Sell—In addition to incentives, there's a return to emphasis on "selling" a customer. (Turn Page)

While Inventories Build Up, Production Lags





HARD SELL: The hard sell has returned to the auto industry as dealers try to bolster lagging sales, unload high inventories before '59 models appear.

What it means is that automakers are firmly convinced salesmen are their key handhold for climbing out of the sales hole.

There is a lot of talk, principally from outside the auto industry, that the industry is on the wrong track, that it is out of step with changing times, both socially and economically.

Same Concept—Except for some concessions on price and small cars, and the success of the American Motors small car concept, there is little indication of a radical change in thinking in Detroit about the future car market.

One automotive executive explained this is the first time in years that the companies have been able to get dealers to listen. When business is good, a dealer develops the attitude that he's making enough money, why sell more?

"This isn't the time to wring your hands and say the world is going to hell in a basket," he says. "It's time to work with dealers and get them to do what they should have been doing right along."

What's Needed—Some of the improvements needed? Tighten sales organizations. Improve service op-

erations. Improve efficiency and cut overhead.

Most automakers feel saturation campaigns have only a limited impact. Then, it's up to the dealers and their sales forces to maintain the pace on their own initiative.

There is plenty of evidence to support their contention the overall business decline doesn't have to be—and isn't—as bad as pictured. The big job is to pry the money out of bank accounts and into circulation.

Company Action—Auto companies have taken steps to help do this too, by making their products even more attractive. They have brightened up their lines with a fresh selection of colors.

Chrysler Div. reportedly spent \$2 million to add more glitter to its line. The result is the "Dartline" which features side chrome treatment, additional bright metal on the roof and rear deck lid.

Pontiac has made real leather trim available at no extra cost on models in two series of hardtops.

Price Competition—Ford recently juggled prices, cutting prices \$15 to \$16 for six of its V-8 models in Fairlane and Fairlane 500 series.

At the same time, it switched to its smaller 292-cu in. engine from the larger 332-cu in. engine. The larger is available for about \$11.

A Ford spokesman said, while customers were getting more before, they were paying for it. Now, they have a choice. It will also give Ford an opportunity to pull an advertising rug out from under its competitor. Chevrolet has claimed "lowest price for models people buy most." Ford shaved the difference.

No Easy Way Out—But despite the efforts, automen see no way out of a disappointing year.

Unsold cars in stock still total about 870,000. Unofficial projections of second quarter auto production say output will be about 100,000 units lower than the first quarter's 1,238,518 units. An individual exception is American Motors' Rambler. Output has jumped from 600 to 660 units a day.

Long Shutdowns—There are hints changeover shutdowns in the fall will be longer than the two to four weeks of 1957. Many industry sources estimate production for the year will certainly fall below 5 million cars, for the first time since 1952, possibly as low as 4.5 million. Some 6,115,454 passenger cars were produced in 1957.

However, by new model introduction time, it is believed the worst will be over and the industry will be on the way to another boom cycle.

J. O. Wright, Ford vice president and Ford Div. general manager, last week predicted output upwards of 10 million cars and trucks in peak years between now and 1965.

Big Tooling Plans—More important from the short term probably, he stated the company's tooling programs for 1959, 1960 and 1961 models will "substantially surpass even the unheard-of new model investments of recent years."

Last fall, Ford Div. spent \$185 million bringing out its 1958 models, \$246 million for the 1957's.

Changes in new models to be introduced could bounce the indus-

try back onto its feet. For one thing, only once since the 1930's has automobile production declined two years in a row. The exception: 1951 and 1952, when a railroad strike and government controls limited output. The general pattern has been for odd-numbered years to be good, even-numbered years a down pattern the industry hoped to change this year.

Early Introductions—The odd year resurgence could be sparked further by early fall introduction of new models. According to industry grapevine, General Motors is changing its complete line and will go to common body shell for all its cars, Chevrolet through Cadillac—a system now employed by Chrysler. Such components as front doors, windshields, and firewalls would be interchangeable. Presumably, lower costs would permit more frequent changes.

Next Year's Plans—Most significant result: Chevrolet is said to grow four in. longer and wider on a 119.5-in. wheelbase.

Ford, too, is reported to be changing to a new body in 1959. Edsel will concentrate on its two lower-priced models, and have a high degree of parts interchangeability with the Ford line.

Chrysler is said to be planning an extensive facelift for 1959, with the big change to unitized construction due in 1960. Fins will be revamped, as will hoods and rear deck lids.



PSYCHOLOGICAL LIFT: Automakers are "talking up" a comeback with stickers such as this.

Will Steel Prices Rise in '58?

The odds favor a price boost to offset a scheduled increase in steel wages.

Here are the facts to help you decide whether to plan for higher steel costs.

■ Here is a "Do-It-Yourself" kit to help you decide whether steel prices will go up next summer.

1. Steel wages and fringes will rise again July 1, in this, the final year of the United Steelworkers' three-year contract with basic steel. The estimated cost to steel companies: Steel management version—20¢ an hour; union version—13.2¢ an hour. This does not include a probable cost-of-living pay boost of 2¢ or more per hour.

2. Steel firms already are concerned over their earnings outlook. With steel demand at low ebb, some companies operated in the red during the first three months of this year. Steel management also has learned—the hard way—that prices play a relatively minor role in the overall demand for steel products.

3. There is little or no chance that Dave McDonald, head of the steel union, will forego or modify what's coming to him under his contract. As a realistic labor leader, he can't afford to. The current agreement was negotiated only after a five week strike in 1956. Besides, he's got his domestic troubles. A relative unknown in the steel labor movement gave McDonald a run for his money in last year's union election.

4. Whether the Eisenhower Administration will intervene to hold the line on steel wages and prices is anybody's guess. But keep in mind that that would require a wage-price freeze. And that would

not be politically popular in an already-tough Congressional election year.

The steel companies still remember the 1930's when price cutting failed to increase demand for steel. Instead, one price cut fed on another. Steel users bought in dribs and drabs, waiting for further cuts.

Here's another clue to the thinking of some steel firms on the matter of steel prices:

In its presentation before Senate price probers last summer, U. S. Steel Corp., recalled the testimony of Dr. T. O. Yntema before the Temporary National Economic Committee in 1939. Dr. Yntema, now a vice president of Ford Motor Co., was then professor of statistics at Chicago University.

"No matter how low the price," said Dr. Yntema at that time, "steel can be sold only if products which are produced from steel or by the use of steel are being sold."

"In the case of products produced from steel, the cost of the steel is usually so small a fraction of the total cost of the product that a reduction in steel prices, even if passed on to the ultimate consumer, would not result in a sufficient decrease in the price of the finished product to cause an appreciable increase in its sale."

"As far as steel for production equipment is concerned, it goes without saying that regardless of the price of steel, no one will invest in productive machinery unless he feels the prospects in his particular line of business justify such investment."

Jules Backman, professor of economics, New York University, also testifying for U. S. Steel, pointed out that the demand for steel "depends primarily upon the demand for the end products. . . ."

Aluminum Widens a New Market

Marketers for the light metal win more sales in chemical and petroleum industries.

Applications include: Oil country pipe, drill rigs and platforms.—By G. G. Carr.

Aluminum makers are scoring sales hits in the chemical and petroleum industries. Light metal producers have no delusions about taking over these markets from steel, but they are carving out some choice and growing segments.

The industry's salesmen are emphasizing aluminum's light weight, its corrosion resistance, and its insulating properties.

Over 200 Pct Hike—Aluminum sales to the chemical and petroleum market in 1957 were 61.9 million lb, according to William B. Moore, Reynolds Metals Co. sales manager for these markets. He predicts this will increase to at least 191 million lb annually by 1960. Biggest applications by then should be: Tanks

and pressure vessels, 45 million lb; offshore drilling rigs, 40 million lb; pipelines, 30 million; and insulating jackets, 20 million lb.

Aluminum's sales advantages are well illustrated in the case of oil country pipe—light aluminum pipe for temporary fuel and water lines running to well-heads during drilling. The light weight allows trucks to carry more pipe. In addition, lines can be laid and picked up quickly.

Less Weight—Drilling contractors are using more portable rigs and maintenance equipment. But the weight of truck-mounted steel rigs is above the legal limits permitted by most oil-producing states, says Reynolds. Aluminum rigs are about one-half the weight.

Aluminum pipelines are about twice as expensive as steel ones. Therefore their general use is too costly. But special conditions can make the higher priced pipe a bargain.

For example, at Lake Maracaibo, Venezuela, steel pipe is attacked by

highly corrosive water. However, the aluminum pipe now in service is expected to last at least 40 years.

Speeds Assembly—Offshore drilling platforms at the same location have previously been made of concrete piles to resist corrosive action. But aluminum looks like a better material. The light metal platforms offer several cost advantages in addition to corrosion resistance. They can be pre-fabricated off the site, then barged to drill location. Erection time for concrete piles has averaged about 25 days. Aluminum platforms erected in the fall of 1957 required only two or three days.

More use of aluminum on flow lines should follow the recent development of automatic welding equipment for large diameter aluminum pipe. New welders can turn out a single pass weld on 8 in. aluminum pipe in 17 seconds, an important time-saving.

Processing Use Grows—Aluminum can point to a variety of reasons for expected growth in refinery

Aluminum's Chemical And Petroleum Potential

	Millions of Pounds	
	1957	1960
Drums	2.0	5.0
Tanks, Vessels	25.0	45.0
Process Pipe	10.0	15.0
Exchangers	2.5	5.0
Jacketing	8.5	20.0
Structurals	2.5	7.0
Oil Country Pipe	5.0	15.0
Pipelines	3.0	30.0
Drill Rigs:		
Offshore	2.2	40.0
Portable	—	2.0
Tubular Goods	—	2.0
Tools	1.2	5.0
Total	61.9	191.0

Source: Reynolds Metals Co.



and chemical process applications. Increased use of nitrogen solution throughout industry, for instance, is expected to step up aluminum tank and pressure vessels use from the 25 million lb in 1957 to 45 million lb in 1960. And corrosion resistance plus ease of handling are making aluminum a standard material for many process piping installations.

Another major and growing use is in insulating jacketing for refinery and chemical equipment. Both aluminum foil and corrugated lightweight sheet are proving popular. Reynolds believes this use should rise from 8.5 million lb in 1957 to 20 million by 1960.

Aluminum Oil Cans

Esso Standard Oil Company appears to be satisfied with the performance and economics of their aluminum oil can. The company will use the one quart aluminum cans in its motor oil packaging plant at the Baltimore refinery.

Esso estimates 20 to 25 million cans will be used.

The initial Esso move to aluminum oil cans called for the use of from 35 to 60 million cans at its Bayonne, N. J. refinery. The contract, with Reynolds Metals Co., gave Esso the option of purchasing a years' requirements for Baltimore.

Luria Hearings Over

A Federal Trade Commission hearing examiner is finished hearings on the government monopoly against Luria Brothers and several steel companies.

Next step in the case, according to FTC officials, will be an initial decision by the examiner. This may be appealed, docketed for review by the full Commission on its own motion, or may become a final order of the FTC.

The complaint involves unfair methods of competition in buying and selling scrap under fairly new provisions of the anti-monopoly laws.



VISUAL EDUCATION: A Brown & Sharpe apprentice uses a chart and a part to explain to visiting students how an automatic screw machine turns out a very low tolerance part in just a few seconds.

Machine Tool Class

■ A short time ago Brown & Sharpe Mfg. Co., Providence, R. I., received a request for a dozen application forms for their apprentice training program.

The 125 year old machine tool builder regularly gets more applications than it can accept. But this one came from a high school teacher on behalf of a group of students that had visited the plant.

Students Visits — Many times each year Brown & Sharpe puts out the welcome mat for busloads of students and teachers, some even coming from out of the state.

Despite the letter from the teacher (which B&S was happy to receive), the main purpose of opening the plant to students is not recruiting. Brown & Sharpe believes industry has an obligation to "assure that technology will receive

increasing attention from young men and women at the start of their careers."

Talk and Tour — The average tour includes an explanation of B&S, and American industry in general, by a company executive and a tour of the facilities including special exhibits and demonstrations.

The first attempt to introduce students to industry, several years ago, was to bring local teachers and guidance counselors to the plant for a conference once each year. This method was lacking, and the next step was a monthly meeting of school administrators.

Precision Center — The present system began when B&S opened its Precision Center, a show area in the main plant for the demonstration and display of its products.

Some News Is on the Bright Side

Steel Fabricators Report on Order Pickup

Downturn in mill structural shipments to fabricators came to a halt in March.

Fabricator bookings also rose last month over February levels.

—By K. W. Bennett.

■ Despite the recession, new orders for fabricated structural steel are on the rise.

These are the signs that both fabricators and steel mills find encouraging: A downturn in structural steel shipments from mills came to a halt in March. In some cases March tonnage rose as much as 5 pct over February levels. And April tonnages are also showing slight gains.

End of a Drive—The spurt in steel purchasing by the fabricators is as unexpected as it is welcome. Last year they bought about 12 pct more steel than they shipped in fabricated condition. A drive to cut

back buying began in November and December. In January there was a really serious effort to bring inventories into line with shipments. The drop in mill shipments in February was regarded as a further inventory reduction wave.

In March it stopped and structural shipments began moving in a new direction-up. Fabricator bookings also rose last month, in some cases as much as 20 pct over February figures.

The upturn suggests there's less problem for the fabricators in finding business, than in finding business that's profitable. Their profit picture is little improved.

Some Work, Little Profit—Gradually fabricator prices are firming, but the price-slashing of 1957 discouraged activity. Prices were reduced to the point where many firms refused to bid on work. Even now fabricators are unwilling to bid against new work, except where

shop backlogs are dwindling to the vanishing point.

Mills Urge Buying—Although structural steel is available from mills in as little as two or three weeks, some producers are urging fabricators to start laying down supplies. It's suggested they order structural for delivery before July 1 to take advantage of present prices.

Actually the fabricated structural steel market was not in dire straits even before March. True shipments of structural steel to the industry were running 67 pct below 1957 figures in February, structural bookings were at 56.5 pct of '57 levels. But fabricated shipments were down only 2 pct.

In addition the 1958 figures were being compared with 1957, a record year for the fabricating industry. During 1957 steel mills shipped fabricators an alltime record of over 6.8 million tons of heavy structurals. The fabricators sent out an alltime record 4.1 million tons of finished products. Only bookings failed to measure up. Last year they fell from the record 4.7 million tons registered in 1956 to 3 million tons.



TURN FOR THE BETTER: Both structural makers and users are encouraged by recent improvement in the fabricated steel market. Shipments from steel mills to buyers increased in March and April.

Bank Spurs Sales

Metalworking companies will land a good part of the \$625 million in contracts and orders that will be placed with U. S. firms during the first half of 1958 by overseas purchasers with Export-Import Bank loans.

Industries Profit—Railroad equipment makers will land \$115.6 million in contracts, steel mill equipment firms—\$76 million; aircraft—\$65.8 million; electrical equipment—\$23.9 million; mining equipment—\$18 million; and machine tools—\$6.6 million.

Thompson Tightens Its Organization

Thompson Products, Inc., is aiming for a bigger share of the aeronautical controls and systems market. Its approach has been to marshall its engineering and sales talents into a more centralized corporate structure.

The key move is formation of The Tapco Group, of five former divisions of the company—jet, accessories, pneumatics, aircraft operation of the West Coast Div., and the Cleveland operation of the electronics division.

Heads New Group—Edward P. Riley, vice president, and former manager of the accessories, pneumatic, and hydraulic products divisions will head the Tapco Group.

A companion move, aimed at anticipating new customer requirements, is the creation of a Customer Requirements Group. Key men in this group are staff vice presidents Ben W. Chidlaw, former commanding general of the Continental Air Defense Command; G. R. Moore, in charge of sales and advertising for Thompson; and Len W. Reeves, formerly with the light metals and electronics divisions.

Tax Men Make Advance Courses Deductible

The Internal Revenue Service is doing its bit to spur an educational revival. In a new ruling, the tax men made costs of advanced education deductible.

This will mean engineers, technicians, government officials, teachers and all taking courses voluntarily, to improve their skills, can deduct the costs. This includes lodging, travel, and meals for courses taken away from home, as well as the cost of the instruction.

Deduct—Covered by the new ruling are courses to keep a taxpayer's skill on a par with those of colleagues and competitors, and those required as a condition for keeping a salary or status, as well as

A Space Satellite for 65¢



THREE OF A KIND: These are three aluminum foil satellites that will be launched into outer space this year. They will be launched in the collapsed form and inflated in space. The smaller, 30-in. diam sphere is made from 65¢ worth of aluminum foil. The larger, 12-ft diam balloon will be visible to the naked eye at dawn and dusk.

to help a person qualify for a promotion or higher salary.

The ruling is retroactive. But there is a three-year statute of limitations.

Better Pay For Government Scientists

Government scientists, engineers, and technicians may be getting pay raises soon to bring their salaries in line with their colleagues in private industry.

The new National Aeronautics and Space Agency proposed by President Eisenhower, calls for a "competitive pay" salary structure.

Scientists hired by the new space agency would be paid without regard to the present civil service limitations, which now fix a top of between \$16,000 and \$19,000.

AMC Pressing For Wage Freeze

Despite pre-negotiation opposition voiced by the United Auto

Workers, American Motors Corp. will press for a two-year freeze on wages and economic benefits.

Edward L. Cushman, AMC industrial relations vice president, said the company is asking for the freeze "to allow the Big Three manufacturers to catch up with AM's higher wages, more costly benefits and plant practices."

In addition to no wage hikes in the next two years, cost-of-living payments to AMC workers would hold at 22¢ per hour.

Higher Wages—How much higher are AMC's wages? Mr. Cushman said a major assembly worker at AMC receives a base rate of \$2.14, or 2¢ to 4¢ higher than a Big Three worker. A gun welder at AMC is paid \$2.25 an hour, 12½¢ to 15¢ higher than a worker at other car-makers.

In answer to AMC's proposal, union bargaining representatives said "the plan is unacceptable to the workers", and indicated it would pursue more conventional demands, like profit sharing.

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Alloy
Stainless
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Jones & Laughlin

STEEL CORPORATION

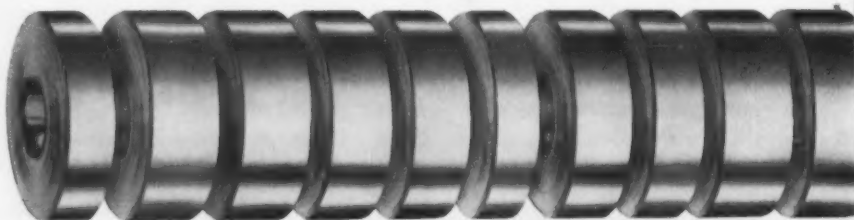
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Don't Let the Auditors Take Over

Cost cutting is the rule as industry fights to keep its head above water.

But there's a serious danger of cutting non-productive, but important functions, of letting go trained personnel you may need later.

• It's an old axiom of business that when things get tough, the auditors take over.

It's a natural tendency, but it's also a tendency that can be carried too far. There's a lot of uncomfortable evidence that this is the case right now as companies try to combat the recession with strict cost cutting measures.

Across the Board—It applies to personnel, materials, and requests for new equipment. The auditor is likely to look askance at any expenditure that doesn't show tangible results in lower costs or more sales. Non-productive departments are the first to reflect this attitude in cuts in personnel and general tightening of the budget.

Letting the auditor take over doesn't always mean a physical transfer of executive power and responsibility. It may be in response to a directive from the board of directors or the president that becomes a corporate state of mind.

Services Slashed — Many large companies are slashing their public relations staffs 50 pct, or just dropping their public relations agency until things get better.

In other functions, such as industrial relations and personnel, whole departments and departmental functions are merged or absorbed, with resulting cuts in expenditures and manpower.

Putting it bluntly, the heat is on any individual, group or department, or spending request that doesn't actually produce a tangible product or bring in some revenue.

Keep Under Control—You will have to watch that tendency in your company, and keep it from creating permanent injury. You can't afford to lose good will in your community, for example. If you felt

it necessary to have men working on good community relations in good times, it may be even more necessary to keep it up now that things are tough.

The same line of reasoning can be applied in other directions. You can't afford to postpone purchases of cost-cutting equipment just because sales are off. You may need it even more next year—when you might have to wait for it.

Home Building Looks Better

Incentive Is There — Keep a very watchful eye on the home building scene. It may be the tipoff of the business upturn expected later this year.

For one thing, it's getting every push possible. Conditions for buying a new home are at their best since 1955. When the potential buyer realizes this, a substantial increase in home building should materialize.

Easier Money—Mortgage money is available at lower interest rates. The no-down-payment was restored last week on VA homes. Results should be felt in the construction industry soon.

Interest rates on mortgages have dropped about half of one per cent in the last few months. It's conservatively predicted they will drop another quarter of a per cent before long. A year ago, it was freely predicted that these rates were gone forever.

Improvement Noted—Improvement has already been noted, even before the down payment action. Applications for mortgage insurance for new homes reached 24,968 in March, an improvement of 2,776 over the previous month. Initial

reports for the first 10 days of April indicate even sharper improvement.

Few authorities predict a major upsurge; an annual figure of about 1 million to 1.15 million homes is a representative prediction. But this rate, if achieved, will mean a lot in pulling out of the recession.

Major Upturn Needs Capital Spending

Although a gradual upturn in business is now looked for later this year, there is virtually no sentiment indicating a sharp up-trend or an early boom.

The reason: This year's upturn will be based on buying of consumers' goods. A real boom takes a combination of consumer buying and layouts for capital goods.

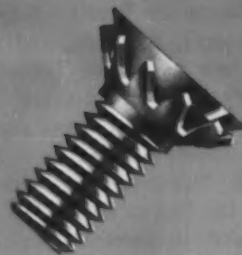
Industry spending plans are still on the downtrend, and are not likely to reverse before 1959. It's generally believed that population trends will force renewed capital expenditures by or before 1960.

For the short term, consumer spending calls the turn. For the long term, capital goods and construction continue to play the dominant roles.

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UNITED SCREW & BOLT CORP. _____ Chicago 8, Illinois
_____ Cleveland 2 Ohio
WALES-BEECH CORP. _____ Rockford, Illinois

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How to Spot the Business Upturn

By Howard T. Hovde—Vice President, The Econometric Institute, Inc., New York.

Being able to spot the point where the business recession turns the corner will mean a lot to your business this year.

Here are some key factors to keep a close check on, plus some predictions of what's ahead in the business climate.

■ I once asked a steel executive what I could tell him about his business that he did not know. The query was posed after an hour-long forecast in which I had discussed the industry outlook.

His reply: "In your periodic conferences with management, you never tell us what we know. All we know is the volume of orders on our books which we open each quarter. You relate the likelihood of what will happen to our customer's business six, nine and twelve months ahead, and, by inference, how they will buy from us."

Whose Orders—The nub of the answer is: "Orders, but whose orders?"

The starting point of econometric analysis is new orders received by manufacturers. These are collected weekly and weighed accordingly.

Experience indicates that current orders correlate closely with future national income and are an effective gage of business activity.

Demand Factors — Thus, a knowledge of current orders makes it possible to measure national income, purchasing power, and the demand for consumer goods in the months ahead. The demand for consumers' goods determines how much capacity will be required for producers' goods, raw materials,

(Turn Page)

Calling The Turn in Business Trends

The Econometric Institute, Inc., was founded in 1938 as "an organization for the measurement and interpretation of economic forces." Since then, it has a record of amazing accuracy for calling the turn on business trends.

In 1945, it forecast postwar boom conditions. In September, 1948, it forecast recession for 1949. In June, 1949, it forecast recovery. In April, 1953, it again forecast recession and in May of 1954 it called the recovery. In August, 1956, it forecast recession in industrial production, but steady to rising personal income after the year end.

Cap and Gown — Howard T. Hovde, vice president of the Institute, was once a professor at his alma mater University of Pennsylvania's Wharton School of Finance and Commerce, and a visiting research associate at Harvard Business School.

Dr. Hovde says it took World War II to shake him out of academic work. He started with war agencies in Washington and ended service as head of European Policy and Planning Div., Office of Foreign Liquidation Commission, and as special negotiator of Belgian war debts.

Mathematical Approach — He has served as president of the



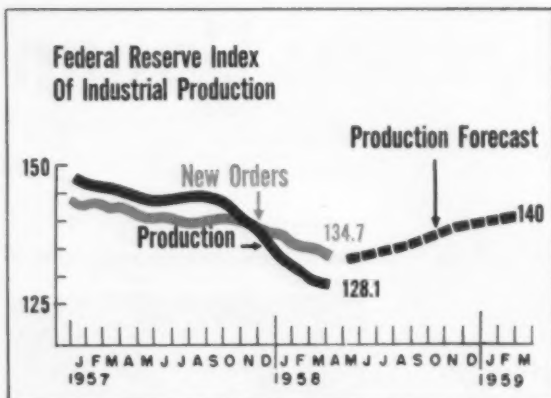
Howard T. Hovde

American Marketing Assn. and as trustee of the National Assn. of Wholesalers. Although he has doctorate degrees in both economics and psychology, he favors an economic and mathematical approach to business problems.

Econometric analysis is built from a model that reflects the total economy. It combines techniques in mathematics, statistics, and economics, tempered with knowledge and interpretation of current economic and political developments.

Virtually all of Econometric's findings are intended for internal consumption by clients. Its forecasts rarely appear in general media. This article, specially prepared for The IRON AGE, is a rare exception.

Econometric Institute Forecasts . . .



ALL PRODUCTION: With new orders, although declining, still far ahead of production, an upturn is indicated. Econometric Institute predicts a FRB index of 140 a year from now.



CONSUMERS' DURABLES: Sagging auto production has led the decline in this category. But consumer durables are expected to lead the climb, bouncing back to 1957 levels by early next year.

and capital investment.

The average businessman, of course, does not have a battery of statisticians and economists available to compile all the necessary information, nor the staff to interpret them in their complex relationships.

What to Watch—However, there are certain developments to watch that can help you spot the upturn when it comes. Key things to watch are:

1. Your customers' inventories; when they stop declining or begin increasing, this will signal the start of the business upturn.

2. Inventory corrections, once started, will feed on themselves. As orders rise, delivery dates lengthen and current inventories will become inadequate.

3. Keep a close eye on the final consumption of the products that affect your business. As long as final consumption exceeds the rate of production, pressures build up to stop inventory cutbacks. Shortly,

they will result in new inventory buildups.

4. If a tax cut of a reasonable proportion is enacted, there will be a rapid increase in consumer spending, which would create strong pressures for a rapid upturn.

5. Another thing to watch is the combination of influences relative to government spending. The mere increase in government spending plans has a delayed effect, but does not of itself indicate an upturn.

6. While government statistical information is good, it is late. Cultivate sources of current information about your own business, your customers' business and, if possible, their customers' business.

On the basis of econometric analysis, we can forecast the pattern of the economy for six months to a year ahead. Forecasts over the longer term may not be as definite, but the trend and the pattern of the economy can be described with usable accuracy.

Example in Steel — To cite a specific example, the demand for steel depends, simply, on the production or use of items or products made from steel.

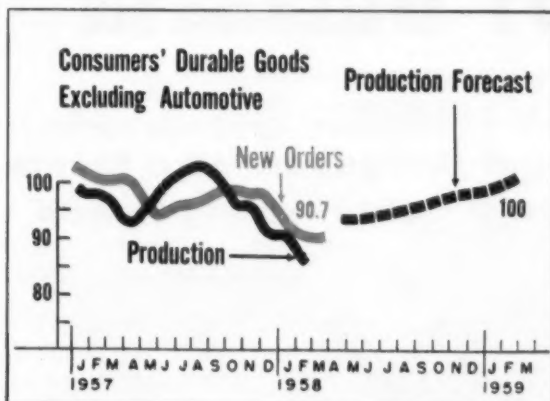
But, as a rule, steel users do not buy exactly as much as they consume each quarter, and consumers, in some periods, build up sizable inventories. These abnormal inventory changes lead to many problems.

But changes in inventories in the hands of consumers can often signal a future change in the course of business. If consumers are buying more steel than they need, the signal is raised for a downturn.

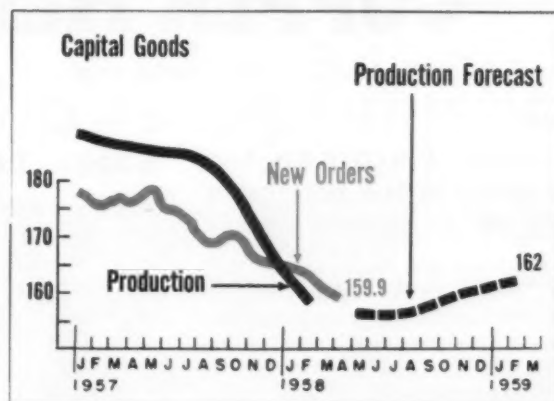
Prediction—Contrariwise, if consumers use more steel than they buy by drawing down inventories, the signal is raised for an upturn.

In view of a substantial reduction in the production of automobiles and other steel products, and a continued depletion of steel inventories, production of steel and steel castings, this year will probably be in the neighborhood of 100 million tons, a decrease of probably 13 pct from year-earlier levels.

... a Gradual Upturn into 1959



NO CARS: Excluding the automotive factor in consumers' durables, the picture shows less violent ups and downs. The forecast for the next year is a gradual, but steady, upturn well into 1959.



CAPITAL GOODS: Although the long-term outlook for capital goods is excellent, no sharp upturn is looked for for at least a year. But some improvement is expected with new orders looking better.

Shipments of finished steel will be off perhaps by 11 pct while consumption of finished steel may be down no more than 9 pct. Depletion of inventories, therefore, accounts for the major cutback in production.

Late Pickup in Cars — Since 1955, the automobile industry has been the nation's second largest consumer of steel. On the basis of car production so far this year, it would appear the industry might not produce more than 4.4 million cars. Nonetheless, a more reasonable forecast of car production would be 5.4 million for 1958, with a pickup accelerated in the fall of this year, and consequently, a greater consumption of automotive materials and components.

Despite a gloomy start, prospects for increased total construction activity and related building activity will continue to improve during the next three quarters. Already forces are at work that will assure the upturn.

Hit at Peak Points — Effects of inventory changes are the greatest

at the top and bottom of a business cycle. It is now likely that we have run the course of inventory depletion. Materials in stock are so low, and the lead time for purchase so short, that an upturn is inevitable. Just as at the top of the cycle, the multiplying effect is cumulative. With little or no inventory depth, delivery time lengthens, stocks are accumulated and prices tend to rise.

The low of industrial production has probably been reached and we may expect a gradual but sure upturn for the remainder of the year and into 1959. As measured by the Federal Reserve Board Index of Industrial Production, recovery by the year end may be in the neighborhood of 138-140, with the year's average about 135, compared with 143 in 1957.

Consumers' Goods Lead — The recovery in the current decline will be led by the consumer goods industries and by raw materials. Capital goods industries will tend to hold their own positions, but are hardly likely to lead the procession as they did in 1954.

While current orders have been disappointing, because of the plummeting drop in business confidence, nevertheless the ultimate demand assures a pickup late this year.

In the long run, calculated demand is based on the population factor. This is favorable for the long-term rise in steel production, as well as for most of the major industries.

If you are looking ahead for the next five or ten years, the growth factor remains as bright as ever. By 1963, the FRB Index of Industrial Production should be above 180, compared with the low of this year of about 130, and by 1968 exceed the 200 mark.

These are reasonable and obtainable objectives in which the metalworking industries will enjoy a proportionate growth with the country as a whole.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th St., Philadelphia 39, Pa.

BRIDGEPORT BRASS COPPER ALLOY BULLETIN



Reporting New Developments in Copper-Brass Alloys and Metalworking Methods

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Typical cored-forged parts

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Bridgeport Metal Laminates provide combinations of chemical, physical and mechanical properties unobtainable in a single metal. Use them to solve dual corrosion problems, improve electrical and thermal conductivity, combine high thermal conductivity with corrosion resistance, and provide greater strength-to-weight ratios.

Write for test samples and for a copy of the 8-page booklet detailing applications, properties, types, sizes, etc., of Bridgeport Metal Laminates.

Stock Temper Bridgeport Wire Meets Many Special Cold Heading Needs



A few of the wide range of Rockford Screw Products fasteners made with Bridgeport wire.

Bridgeport's high-quality standard alloys help produce superior products and cut costs too. For example, Rockford Screw Products, Rockford, Ill., finds it possible to use our *stock temper* wire for a wide range of special and standard fasteners. Gains in economy are obvious. To conserve material and reduce manufacturing costs, the company cold heads the parts. Bridgeport Brass and Copper Alloy wires have the high qualities of malleability, ductility, strength and stiffness for this process.

Alloys Used

Three Bridgeport Alloys are used by Rockford Screw Products:

70-30 Brass 69: an extremely ductile wire, particularly suitable for making exceptionally large heads and certain types of hollow rivets.

Silicon Bronze 609: an outstandingly malleable alloy even in hard-drawn condition. Finished bolts above 100,000 lb per square inch can be produced from it. This alloy is highly resistant to stress-corrosion cracking and is suitable for

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Commercial Bronze 25: although named "commercial bronze," this alloy does not contain tin. It resists season-cracking and is more resistant to dezincification than brass. It is recommended for interior or exterior applications.

Bridgeport's Wide Range of Alloys

Rockford Screw Products has found that corrosion resistance, lasting strength and hardness, and ease of finishing make Bridgeport Brass and Copper Alloys ideal for all types of industrial fasteners. And the great variety of alloys available assures the selection of a metal with exactly the right characteristics for any particular job.

Whatever the application and whatever the industry, Bridgeport Alloys help improve products, smooth production, cut costs. Your Bridgeport Salesman will be happy to advise you—and through him is available the full experience and facilities of Bridgeport's Technical Service. Call him.



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Frederick J. Close

A Salesman Who Is Optimistic

Alcoa's Fritz Close began his selling career in 1929 when things were really tough.

The comparatively mild dip we're in now is no excuse for being discouraged, he says.

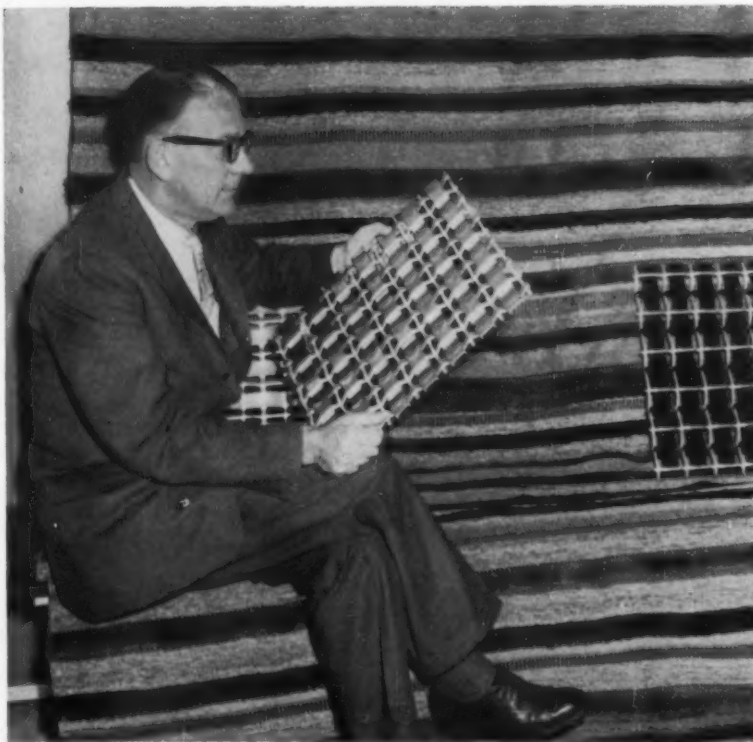
■ With new capacity standing idle and old customers caught in the general lag, Aluminum Company of America is putting steam behind its search for new ways and places to use aluminum.

One of the men behind this drive is Frederick J. Close, recently named general manager of Alcoa's sales development and commercial research divisions. "Fritz" Close's biggest accomplishment has been to help open the architectural market for aluminum.

His Big Jobs—Known in the company as "a guy bubbling over with new ideas," during 29 years with Alcoa he has handled such jobs as the Empire State Building (750,000 lb of aluminum), Rockefeller Center (3 million lb), and the Alcoa building in Pittsburgh—fore-runner of modern curtain wall construction in multi-story buildings.

And while Fritz Close's most noteworthy marketing contributions have been in the architectural field, he is driving hard to get more aluminum into homes, factories, and autos.

Proven Sales Creed—His Pittsburgh office is filled with aluminum wall panels, aluminum chairs, toilets, watches, and dozens more articles. He is impatient with talk of slumps caused by oversupply and satisfied demand. During the depths of the depression, from 1930 to 1936, he successfully peddled aluminum and is undismayed by the



F. J. CLOSE: Obsolescence is our greatest peddler.

current recession. There are new needs and new wants, he vows.

"Our greatest peddler is obsolescence," says Mr. Close. Aluminum and all industry must come up with brighter, better products to make last year's models look old, he explains.

Varied Experience—A native of Pittsburgh, Mr. Close joined Alcoa in 1929, a year after he was graduated from Pennsylvania State University. After sales apprenticeship training, he was assigned to the New York office and was in charge of architectural sales until 1936.

Then followed assignments in the sales contact department, as assistant forge plant manager at Cleve-

land, manager of architectural sales, and manager of market development.

Developing a Market—The first big breakthrough in architectural aluminum came with the building of Rockefeller Center in the early Thirties, recalls Mr. Close. He and his staff were able to convince the architects that spandrels made of ball-burnished aluminum "would look more like lead-coated copper than lead-coated copper."

As a result, 3000 aluminum spandrels went into the Center. Aluminum window sills and coping went in. This one big showplace gained for architectural aluminum the acceptance it needed.



ON ITS WAY: Beginning in May, Ford Motor Co. will import this Taunus wagon and five other models.

Are Small Cars Here to Stay?

U. S. automakers are getting edgy over the growing popularity of imported cars.

They may be forced into the small car field if the trend continues.—By H. R. Neal.

■ As U. S. automakers fight to keep their heads above the sweeping tide of recession (see Special Report, p. 63), imported cars continue to rack up records.

New car registration figures just released by R. L. Polk & Co., show 20,075 imported cars sold last month. This is more than double the 9515 units registered a year ago.

Growing Trend—Of equal importance is the fact imported cars accounted for 6.02 pct of February's 333,580 new car registrations—nearly triple the penetration figure of 2.17 pct for the same month in 1957 when 438,725 new cars were sold.

In January, import registrations

totaled 19,293 units. This was 5.05 pct of the 381,932 cars sold in the month.

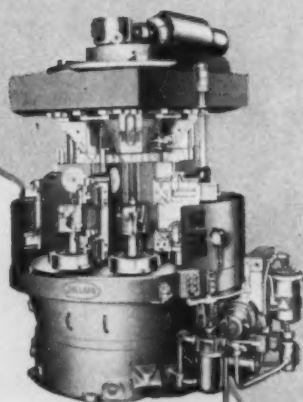
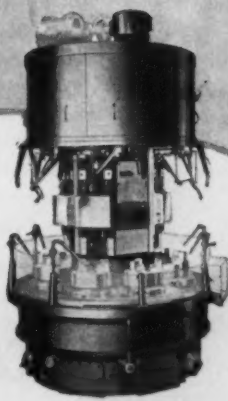
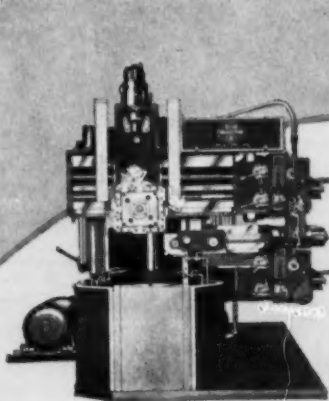
Foreign car registrations in 1957 totaled 206,827 units and accounted for 3.46 pct of total sales in the U. S. In 1950, only 16,337 imported cars were registered for an insignificant 0.26 pct of the U. S. market. The pattern for the past several years has been for sales of foreign cars to double in both units and per cent of market penetration.

Dealers Tripled—If more people are buying economy cars, one of the reasons might be there are more people selling foreign cars. A survey by Automotive News, a weekly industry publication, disclosed there are now 11,088 dealerships selling imported cars. This is more than triple the 3043 outlets doing business in foreign cars at the beginning of 1957. The publication said there is now one import outlet for every 3.5 domestic-car dealerships. A year ago the ratio was 1 to 8.5.

General Motors is mainly responsible for the tremendous increase in the number of foreign car outlets. Last autumn GM began importing its German Opel and English Vauxhall models. Some 3100 Buick and 2455 Pontiac dealers took on franchises, increasing by 5555 the number of outlets for foreign cars.

Tie-In Arrangements—While the growth in the number of dealerships handling imported cars is impressive, some attention should be given to the method of that growth. A majority of foreign car outlets are primarily domestic-car dealerships. By utilizing existing facilities, dealers can take on a foreign car franchise with little additional expense for display or service facilities. Overhead is borne by the U. S.-built car line.

Automotive News' survey reveals 83 pct, or 9168 of the 11,088 imported-car outlets, are also domestic-car dealers. Nearly one of every four dealers handling American



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A Machine Rebuilding Program has been established which permits us to offer you excellent service on rebuilding your present Bullard equipment.

We believe that our facilities offer you many advantages including:

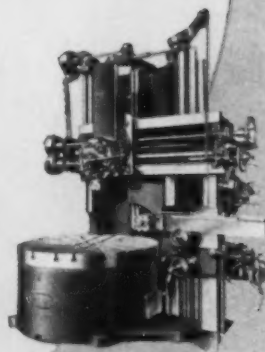
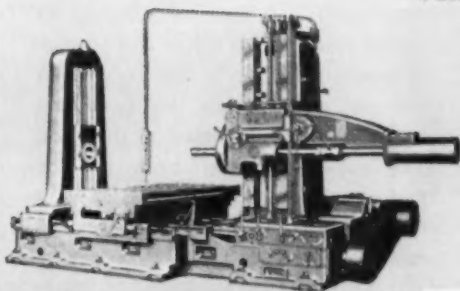
- 1 "Original manufacturers" know-how.
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The separate load and motor brakes operate simultaneously. Each alone can hold the capacity load. Safe 24-volt push-button control, low headroom, choice of suspensions, and "in-the-air" serviceability are other Load Lifter features. Single and 2-speed models available in 1 to 15 tons.

Control so accurate.
you can even spot
a load on glass —

SAFELY!

To demonstrate that the double braking system on the Load Lifter Electric Hoist does stop loads instantly, we set up this "glass test". Time after time, the hoist operator spotted the load on the fragile window glass without breaking it!

Fast, accurate spotting with no drift or backdrop is a must in handling all kinds of loads. Load safety and production economy demand it—the Load Lifter Hoist assures it. While this novel test proves the precision control of the Load Lifter, convince yourself by seeing one doing actual production work. Call your Shaw-Box Distributor and ask him to arrange for a demonstration in a nearby plant. Or, write us for complete details about Load Lifter Wire Rope Electric Hoists.



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Automotive Production

WEEK ENDING	CARS	TRUCKS
April 12, 1958	84,207	17,135
April 4, 1958	64,318	16,888
April 13, 1957	126,194	22,761
April 6, 1957	130,138	23,896
TO DATE 1958	1,378,007	258,735
TO DATE 1957	2,048,394	325,561

*Preliminary

Source: Ward's Reports

cars also handles an import. At the beginning of 1957 only 4.4 pct of the dealers also carried a foreign line.

Captive Imports.—Of the foreign-domestic car deals, 67 pct carry one of the "captive" imports. The captives are Metropolitan, Vauxhall, Opel, English Ford and Mercedes-Benz.

These figures are due for a further boost next month. In May, Ford will begin to distribute six models of its German-built Taunus through Mercury, Edsel and Lincoln dealers. The M-E-L Div. is also responsible for marketing the English Ford in this country and is stepping-up its franchising activities.

Franchise Hunting.—Non-captive imports are being sold through dealerships of just about all American-make cars. Many of Chrysler Corp.'s dealers are included in this group as Chrysler is the only American automaker without a foreign car of its own or a tie with a European manufacturer.

But GM and Ford dealers, unable to get a franchise for one of their own imported cars, have jumped the fence and taken on another company's product. Some 1765 dealers have done this.

Domestic Aid Needed.—There are an estimated 1920 dealerships handling foreign-cars exclusively. Of these, only 570 limit themselves to a single car line. Without the support of domestic car dealerships, it appears doubtful many European carmakers would find the American market as enticing as it now seems. There are more than 40 makes of foreign cars now being sold in this country, compared with less than 20 U. S. makes.

European carmakers still depend primarily on the world market rather than the U. S. Sales to this country mean more in terms of American dollar credits than they represent in unit volume. Their investment here is small, and they can pull out quickly if the bloom should leave the rose.

U. S. Automakers' Status.—Where, then, does all this leave the American-built small car? It's in the drawingboard and design stage for sure. One of Detroit's open secrets is the small car activity at Ford and Chevrolet. Both cars are in the same category as American Motors' Rambler American in wheelbase, overall size, and probable horsepower. This would make them slightly larger than the majority of "economy" imports.

Tool and die shops have been asked to make quotations on some of the tooling that would be involved. But there is a big difference between asking quotations and releasing work where a project like this is involved.

Noticeable Reluctance.—Re-

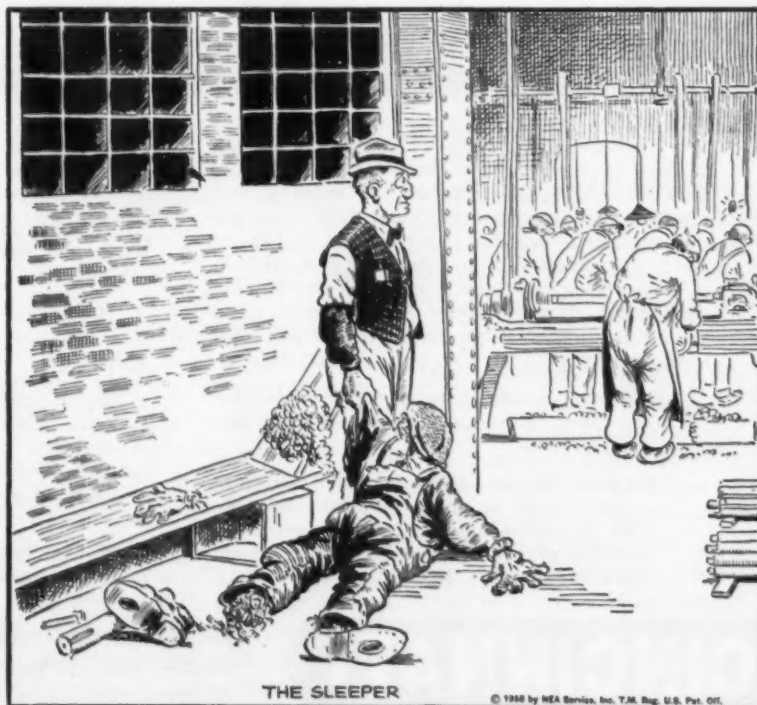
portedly, Ford is unhappy with the cost difference between its present full-size line and the small car. So far, the smaller vehicle would only cost about \$150 less to make. Ford would like to see the difference increased to \$250 at least.

Chevrolet doesn't care for the idea of a car that would compete with its regular full-sized line. Besides, GM like Ford has its English and German-built cars to fill in while the market is studied.

Who Buys?—Several surveys conducted to plumb the depth to the market show the average small car buyer has an income in excess of \$5000 a year. This is above the income of the "average" low-price car buyer. They are also apt to have another, larger car. Buyers of U. S. volume cars have, for the most part, a one-car income.

American Motors' Rambler American is the only U. S.-built car competitive in size with the imported small cars. Yet, it too would undoubtedly prefer to see its American buyers purchase the larger Rambler.

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THE SLEEPER

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Increases productivity of the machine for short runs. Arbors can be changed in a few seconds' time.

No need for special-purpose quick-change accessories for multiple operations. ARBOR-LOC accommodates Cincinnati's complete new line of standard No. 50 flanged arbors and adapters.

Simplifies tooling problems through more complete standardization of arbors and similar accessories.

Quickly assembled and removed for setups where not required, such as for face milling cutters.

Does not restrict use of existing arbors, adapters, etc.

*The following CINCINNATI knee-and-column milling machines are equipped with ARBOR-LOC spindle nose: Nos. 2ML; 2 and 3MI; 2, 3 and 4 Dial Type; 2 and 3 High Power Dial Type; 2 and 3 Dual Power Dial Type; plain, universal and vertical styles. You may obtain more information by writing for publication No. M-2016.

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HARDENING MACHINES • CUTTING FLUIDS • GRINDING WHEELS

Cool Reception for Defense Plan

Congress Reluctant to Yield Any Powers

Plans to reorganize Defense Dept. will move slowly through Congressional mill.

Alternate bill originating in Congress may be favored on the Hill.—By G. H. Baker.

■ Congress is wading into plans for overhauling the Defense Dept., but the lawmakers are getting no more than ankle-deep into President Eisenhower's lately-unveiled reorganization proposals.

The President's views on shaking up the top military structure gave congressmen something to ponder during the Easter recess. His ideas as to changes were being followed up by suggested legislation that will spell out his intentions more precisely. However, a House committee this week will show more concern for an earlier bill.

Alternate Plan—House Armed Service Committee has before it the Vinson-Kilday-Arends bill. This would alter the Defense Dept. structure, especially as concerns the office of the Defense Secretary and the Joint Chiefs of Staff (The IRON AGE, April 3, p. 73).

White House-sponsored plan also will get the committee's attention. There's a wary attitude on Capitol Hill regarding the plan. A number of congressmen are opposed to the appropriation of new military funds to the Defense Secretary, who would—under terms of the President's proposal—then allocate it to the services.

Reluctant to Yield—Such action would undoubtedly give the Defense Secretary more voice in the procurement of weapons and supplies. This

recommended change is expected to get scant support in Congress, which prefers to say which services will get funds and in what amounts.

Congress also is unlikely to agree to any change that would make the armed services mere housekeeping facilities for unified operational commands. And making such unified commands responsible to the Defense Secretary is not favored by Congress.

Oppose Centralizing—Many of the lawmakers oppose centralizing budgetary, supply, and procurement authority in the Defense Secretary. This grouping idea though, is an integral part of the White House plan. Supporters consider it as a means of cutting waste in fiscal and logistics operations.

There is some fear on Capitol

Hill that this authority in the hands of a single Pentagon executive would be harmful to the nation. At present, there is somewhat greater enthusiasm seen for the more moderate bill before the House committee and an identical measure in the Senate. The debate over reorganization may well extend past the end of this session.

Worker Complaints Flood NLRB

Individual workers are now filing more complaints than either unions or employers, the National Labor Relations Board reports.

Some 50 pct of all unfair labor practice case filings now are coming from individual workers, the NLRB says. It is the first time worker complaints have outstripped cases filed by unions or management.

Democrats Push Own Recession Program

Can't Wait—Leading Democrats in Congress are serving notice on Ike that they won't go along with his "wait-and-see" approach to anti-recession action.

They're making it clear to the White House that they expect to enact some forceful and positive action to restore high-level production and sales. They want no part of anything that smacks of a shilly-shallying attitude toward unemployment, with the national elections only six months away.

Payoff at Polls—Democrats are jubilant over their chances in the coming elections. They frankly anticipate sweeping victories. They expect to widen their majorities in both the Senate and the House, and to

strengthen their hold in a number of state capitals.

Republicans in Congress are growing more despondent over their chances to grab any credit for ending the recession. The White House is offering little positive action for ending the recession.

GOP in Minority—And lacking majorities in either Senate or House, they are powerless to ram through any legislation to reduce taxes or speed up public works programs. All they can do is to add "me, too" to anti-recession moves authored by Democrats. It's a frustrating position for them to be in, and there's much grumbling against the White House for failure to act more positively and aggressively.

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Time and again, engineers and designers plan with Copper and its alloys when there's a tough job to be done. For instance, the American railroads, in an effort to eliminate crippling "hot boxes" have been experiencing great success with a new self-lubricating cartridge-type journal bearing. Each of these bearings contains 75 pounds of bronze... a Copper alloy.


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Why Coast Gets Missile Orders

Area's Advantages Will Continue, Expert Says

William M. Duke, director of Titan missile program at Ramo-Wooldridge, sees active future for contractors.

Only deliberate decentralization of plants could bring slowdown.—By R. R. Kay.

■ Will the West Coast remain a dominant area in missilemaking?

Farwestern metalworking firms engaged in missile contracting and subcontracting are interested in finding out.

To get the answer The IRON AGE went to William M. Duke, of Ramo-Wooldridge Corp.'s Space Technology Laboratories. He's program director for the Titan ICBM (intercontinental ballistic missile) program.

Here's the way it looks to him for the big "beasts"—the IRBMs and the ICBMs:

Q. Are West Coast plants ready to mass-produce missiles?

A. The facilities of both prime contractors and subcontractors associated with the current missile programs are largely on the West Coast. As long as these programs run—and they are just getting started—this part of the production effort will remain where it is now.

This means that the West Coast will be very active in missile production for a long time—barring deliberate decentralization. However, this seems unlikely during a development period.

One of the reasons for growth of the area's missile industry, of course, is the availability of aircraft plants. Another is the weather, which favors outdoor assembly and test. If contracts for future generations of mis-

siles are awarded outside of the aircraft industry, we can expect a wider geographic spread of contractors.

Q. Will the Coast need new plants?

A. Present or planned capacity can handle the currently projected missile production programs. It doesn't look as if there will be need for new missile plants.

Some subcontractors, however, may require more plant capacity. Of course, a major increase in the

overall level of missile activity would make these guesses obsolete, and additional facilities necessary.

Q. How about new skills?

A. Missile manufacturing does not call for truly new skills. Trained technicians and workers will always be needed. Such men can adapt themselves to any new skills which the future may demand.

As the production programs move along more attention may be given to exceptional plant cleanliness and worker reliability.

Camera Check on Aircraft Performance



AERIAL KIBITZERS: Lockheed engineer installs 16 mm cameras which will operate during takeoffs and landings of the prop-jet Electra. Automatic observers, controlled by co-pilot, will record instrument readings and show plane's airport performance in step-by-step sequence.



6 SPEED NUTS® replace 10 fasteners ...and costs drop 80%!

Six Tinnerman SPEED NUTS replaced 10 weld nuts on the Gibson Window Air Conditioner... and production costs dropped more than 20 cents per unit!

Working with the designers at Gibson Refrigerator Company, Division of Hupp Corporation, Tinnerman engineers suggested using four "J" Type SPEED NUTS to fasten the front panel to the air conditioner cabinet. These one-piece, self-locking, spring-steel fasteners snap in place by hand; are self-retained in screw-receiving position. They also used two Flat Type SPEED NUTS to fasten the window mounting channel to the cabinet.

By eliminating ten weld nuts, Gibson was able to divert a spot welding machine to other uses, reduce materials handling, simplify and speed up assembly. They cut costs right down the line — without sacrifice of product quality!

Savings like this are being made every day when manufacturers switch from ordinary fasteners to Tinnerman SPEED NUT Brand Fasteners. Over 9000 variations are available to handle practically any fastening job, from tiny transistors to huge freight cars.

Send for complete data on how you can make important assembly-cost savings. And investigate the possibilities of having a Tinnerman Fastening Analysis made of your products. Call your Tinnerman representative, or write to:

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CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Survaux (Seine). GERMANY: Mecano-Gundy GmbH, Heidelberg.

A New U.S. Surplus Tool Policy

Schools to Get More, Foreign Nations Fewer

Government officials are revising their surplus machine tool disposal plans.

They see an opportunity to improve the level of technical training.—By E. J. Egan, Jr.

■ More of the Government's surplus machine tools are headed for schoolhouses. Fewer will be handed out to so-called underdeveloped countries or kept under wraps in U. S. warehouses. Officials of two U. S. Departments, Commerce and Welfare, will announce details of the stepped-up gift program soon.

Keeping Uncle Sam's surplus metalworking machinery at home has three immediate advantages: (1) Vocational and engineering students will have more and better equipment to work with. (2) The machines will be kept in good working order. (3) Tools donated to schools are subject to recall in a national emergency.

Non-Competing—Sellers of both new and used machine tools see still another advantage in the plan. Equipment given to schools will be kept out of their regular market channels. Moreover, educators getting the tools must agree not to sell them or let them be used for commercial purposes.

British Builders Face Nationalization

U. S. machine tool builders may be bogged down in a temporary business lull. But their British counterparts face a problem that could be permanent—the threat of nationalization.

In defense of their rights to a state of single blessedness, British builders recently issued a statement through their Machine Tool Trades Assn. Its aim: To give Government officials, trade union members, and industry in general a factual picture of the achievements and prospects of a free machine tool industry.

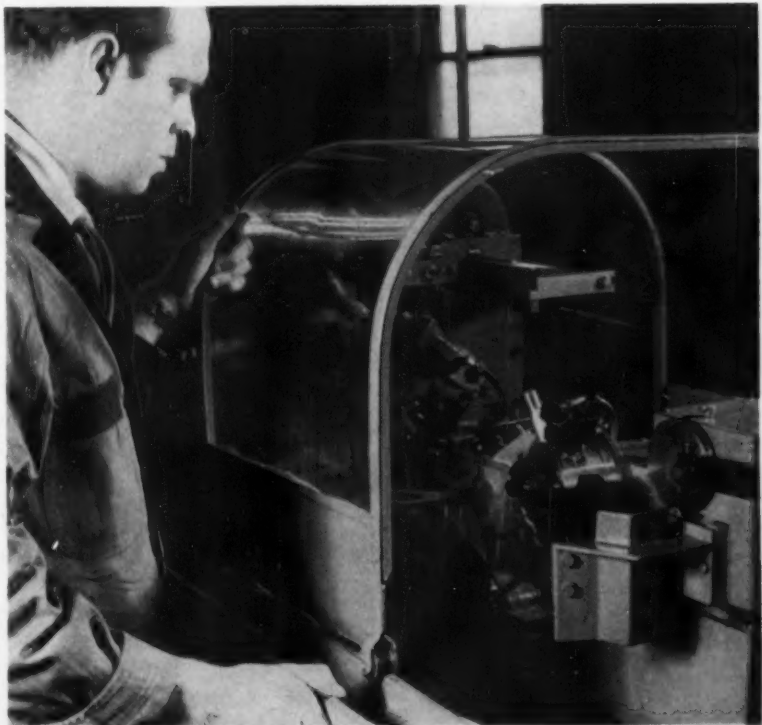
Presenting Their Case — The statement claims that there are 115 British builders employing 48,000 workers. Collectively, this group of firms has trebled its capital investment since 1948, spending over \$84

million on new plants and equipment. Plans call for the industry to invest another \$40 million by the end of 1960.

The small size of many machine tool firms simply indicates that they are specialists.

It does not mean that they are uneconomic units, either actually or potentially. On the contrary, as independent experts, with a proven record of design progress and service to customers, they can operate much more effectively than under any centralized authority.

Golden Anniversary Showpiece



IMPROVED SCREW MACHINE: A series of new features on its Model 750 single spindle automatic screw machine mark the 50th year of The Gear Grinding Machine Co., Detroit. Variable speeds are combined in single cycle.

INDUSTRIAL BRIEFS



NEW NAME: After May 1, National Cylinder Gas Co., will be called Chemetron Corp., as being more descriptive of the company's activities in chemicals, metals, and electronics. President Charles J. Haines demonstrates steel cutout of new name.

Research in Comfort—The Trane Co., La Crosse, Wis., has completed its research and testing center expansion—the "House of Weather Magic." Size of the facility is now double the original building erected in 1953. Cost of the laboratory project was about \$700,000, adding 35,000 sq ft of area for testing purposes.

Pressing Development—A changeover from sand cast aluminum manifolds to a new design stamped in halves from sheet steel won the John Woodman Higgins Redesign Award for 1958. The award was made to J. F. Great-house, new development supervisor of Mack Trucks, Inc., Engine Div., Plainfield, N. J., at the spring technical meeting of the Pressed Metal Institute in Detroit.

Insulation Plus—Insuldur, a new insulating system, has been developed by Westinghouse Electric Corp. It will be used in all future Westinghouse distribution transformers. The system makes it possible to increase by a significant amount the breaker settings of the distribution transformers. Raising the settings will result in a boost of about 25 pct in overload capacity over 1954 settings.

Western Expansion—Handy & Harman has opened a new West Coast plant in El Monte, Calif. It is expected to be the largest precious metals facility in the West, serving electronics, aircraft and missile industries. Fabricating equipment includes a battery of modern rolling mills, strip mills, rod mills, gang slitters, wire drawing blocks, and protective atmosphere annealing furnace.

Metalworking Envoy—W. S. Praeg, president, National Broach & Machine Co., Detroit, is touring industrial metalworking plants in Japan. While there, he will attend the Osaka International Fair, an industrial exposition at which National Broach will be exhibiting its latest developments in gear tooth finishing machines.

From A to M—A & C Engineering Co., Inc., Warren, Mich., has appointed M & M Engineering, Inc., Chicago, as their representative for the Midwest area. A & C are the engineers and manufacturers of "Hydra-Lock" Arbor, the arbor with built-in hydraulic pressure for positive positioning.

Donora Demolition—The contract for the dismantling and salvaging of the Donora Zinc Plant of American Steel & Wire Div. of U. S. Steel Corp. has been awarded to The Kaiser-Nelson Steel & Salvage Corp., Cleveland. Dismantling of operations will start when inventory of the facilities are completed during the latter part of April. Kaiser-Nelson engages in demolition activities as well as the

sale of iron and steel scrap, used machinery, nonferrous metals and power plants.

Under One Roof—All Reed-Prentice operations have been consolidated at the parent company's large, modern plant in East Longmeadow, Mass. Reed-Prentice sales, engineering and developing departments will be located in the building connecting to the main package machinery plant. The expansive East Longmeadow plant covers 400,000 sq ft and is situated on a 40-acre tract which provides adequate room for future growth.

Reinforcements Coming—Concrete reinforcing steel bars, fabricated to specifications, are now being supplied at the St. Louis plant of Joseph T. Ryerson & Son, Inc. The reinforcing bar service to the construction industry includes bending to shape ready for placement in the forms. Bars are tagged for ready identification according to the setting plans with deliveries timed to the progress of the job.

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It will pay you to contact your Sharon salesman and get the facts on these durable, edge-holding steels for saws or any cutting tool or implement.

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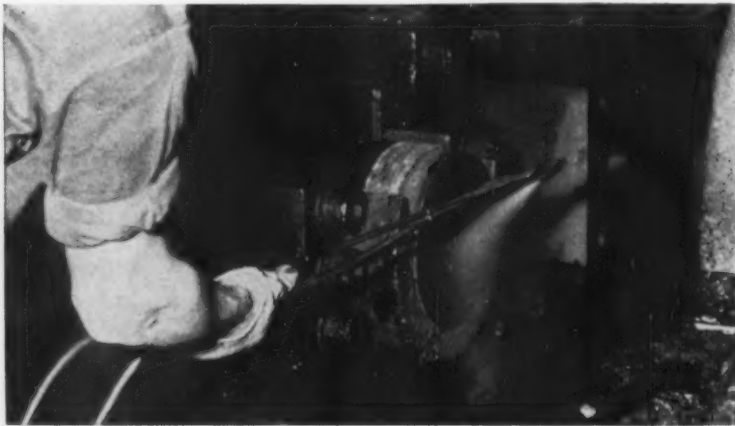
COLLOIDAL GRAPHITE, MOLY-SULFIDE,
VERMICULITE, AND OTHER SOLIDS

Dies last three times longer with 'Aquadag', according to another prominent midwest extruder. Metal pickup on the extruding dies has been completely eliminated by the use of this Acheson dispersion, extending the effective use of the dies from 1000 to 3000 strokes. The evaporation of its water-base leaves a dry, adherent "graphoid" film on all lubricated surfaces, inhibiting the build-up of abrasive precipitates. At the same time, the unbroken, microscopically-thin film that 'Aquadag' provides, facilitates metal flow and reduces scoring to a negligible minimum. Application of the lubricant is by spraying a dilution of 1 part 'Aquadag' to 20 parts water, on the die surface before each "push" of the extrusion press.

A 'dag' graphite coating is also applied to the follow blocks on this company's 1400 ton horizontal extrusion presses. For purposes of even greater economy, 'Prodag' — semi-colloidal graphite in water — is used in this application. This effective parting agent prevents the

WHY 'DAG' DISPERSIONS MEAN PERFORMANCE IN ALUMINUM EXTRUDING

The excellent lubricating properties of Acheson Colloidal Graphite, under conditions of extreme heat and pressure have been confirmed by leading extruders of aluminum, steel, copper, brass, lead and other metals. Water-base dispersions of colloidal graphite used in the following application histories have provided savings in material handling, reduced maintenance time and expense, prevented seizure, extended die life, and produced extrusions of more uniformly high quality. Any one of these benefits should make profitable reading for you.



For faster, more uniform application with less material consumption, Aluminum Extrusions, Inc. finds 'Aquadag' their best die lubricant.

A little 'Aquadag' goes a long way for Aluminum Extrusions, Inc., Charlotte, Michigan. This company, one of the leading independent extruders in the country, has found that by applying 'Aquadag' on die surfaces they have effected a 30% savings in their material handling. Formerly, they had used an oil-graphite mixture which required a dilution ratio of 16 lbs. of graphite to a 55 gallon drum of oil. It was too slowly applied by swab and too coarse to apply by spray with any degree of efficiency.

With 'Aquadag', Aluminum Extrusions has a lubricant that is finer in particle size, permits wider coverage, and provides greater "sprayability". These minute particles pass freely through the spray nozzle, eliminating the costly downtime formerly involved in cleaning clogged equipment. The tough, dry film 'Aquadag' forms upon the evaporation of its water carrier, doesn't smoke or react when applied to hot dies and metals. This improves working conditions as well as extends die life. Important also to both die surfaces as well as the finished extrusion, is the fact that this durable, low-friction film allows easier, more uniform metal flow.

Considered in relation to the over 12 million pounds of aluminum extruded yearly at this plant . . . 85% of it in fabricated form . . . 'Aquadag' has brought important production efficiencies and material economy to Aluminum Extrusions, Inc. In many, similar instances where product quality and basic economy are demanded, Acheson colloidal dispersions have gained ready acceptance.

Exclusive Acheson processing techniques guarantee a consistently uniform top-quality product. If your problem is more effective lubrication under normally adverse conditions of extreme temperature, pressures, or abrasion, call in your Acheson Service Engineer.



Extended die life and extrusions with more perfect surface finish, are attributed to the use of 'Aquadag'.

flash, back-extruded from the billet skin, from locking the butt to the follow block. An Acheson dispersion is very possibly the answer to your lubricating troubles. For additional information, write for your free copy of Bulletin 426. Address Dept. IA-48.



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PORT HURON, MICHIGAN

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New York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto

F. C. Foy, elected president and chairman, Koppers Co., Inc., Pittsburgh.

O. W. Carpenter, elected president, Chain Belt Co., Milwaukee.

W. C. Shaffer, appointed executive vice president, Michigan Forging Co., Dearborn, Mich.; **C. M. Hammond**, elected secretary; **R. W. Stich**, named plant manager; **G. W. Duffield**, appointed sales manager.



E. O. Burgham, becomes chairman of the board, Weirton Steel Co.

J. M. Gavin, elected vice president and a director, Arthur D. Little, Inc., New York.

G. A. Lear, elected asst. vice president, Chicago division office, C.I.T. Corp.



M. K. Schnurr, president, Stainless Steel Div., has been appointed president, Strip Steel Div., Jones & Laughlin Steel Corp.



A. J. Berdis, named president, Weirton Steel Co.

R. T. Jones, appointed superintendent, 10-12-14 inch mill, Crucible Steel Co.'s Midland, Pa., Works.

A. C. Connor, appointed sales representative, Philadelphia area, Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.; **C. A. Mikus**, appointed plant engineer, Coraopolis plant.

O. J. Brown, Jr., appointed manager, continuous equipment sales, Hanson-Van Winkle-Munzing Co., Matawan, N. J.

W. M. Baker, named sales manager, Cardinal Scale Mfg. Co., Webb City, Mo.



G. L. Owens, appointed asst. general plant superintendent, Great Lakes Steel Corp.

MEN IN METALWORKING

C. A. Anderson, appointed general foreman, Blast Furnace Dept., Buffalo, N. Y., steel plant, Republic Steel Corp.

W. R. Johnson, appointed asst. director, research and development, Associated Spring Corp., Bristol, Conn.

F. E. Hawley, Jr., appointed manager, Sheet Sales Div., Wheeling Steel Corp., Wheeling, W. Va.

A. M. Klinger, named sales manager, materials handling products, Ingersoll Kalamazoo Div., Borg-Warner Corp.

M. I. Dickey, appointed superintendent, Houston, Tex., warehouse, U. S. Steel's Tennessee Coal & Iron Div.

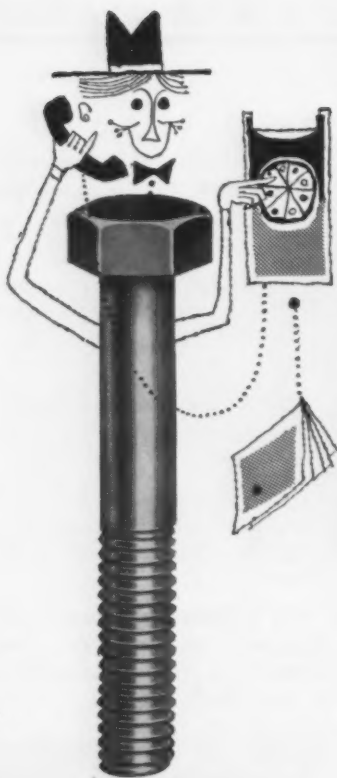


H. E. Gude, appointed vice president, manufacturing, Aluminum Div., Olin Mathieson Chemical Corp.

A. R. O'Brien, appointed superintendent, Solar Steel Corp.'s Nashville plant.

M. F. DuChateau, named director, Plumbing Sales Div., Chicago general office, Crane Co., Chicago.

Following appointments are within Wheeling Steel Corp.'s Benwood Works. **L. F. Jagucki**, appointed chief plant engineer; **E. G. Gray**, appointed plant engineer; **A.**



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N. Ankrom, appointed turn foreman, continuous weld furnaces and mills; **J. E. Munjas**, appointed turn foreman, inspection.

H. B. Joyce, appointed director, purchases, Lyon, Inc., Detroit.



J. G. Smith, appointed manager, primary production, Great Lakes Steel Corp.

H. X. Wilkie, appointed Mid-Atlantic regional manager, Davey Compressor Co., Kent, O.

R. W. Eager, appointed manufacturing manager, Joy Mfg. Co., Pittsburgh.

J. O. Willcox, appointed production superintendent, DeWalt Div. of American Machine & Foundry Co., Lancaster, Pa.



J. A. Glunt, appointed chief metallurgist, Alan Wood Steel Co., Conshohocken, Pa.

F. A. Sullivan, appointed general sales manager, industrial and commercial lighting, Wheeler Reflector Co. and Fullerton Mfg.



L. E. Dearborn, appointed general sales manager, Tractor and Implement Div., Ford Motor Co.

G. W. Seagren, named director, research, Stoner-Mudge Co., Pittsburgh.

J. W. Morton, promoted to plant purchasing agent, Reliance Div., Massillon, O., Eaton Mfg. Co., Cleveland.

M. L. Mitzel, named manager, Detroit Works, Aluminum Co. of America.



C. L. Sheets, appointed manager, Conveyor Div., The American MonoRail Co.

W. F. Green, Jr., appointed asst. sales manager, Long Island City Branch, Wheeling Corrugating Co.; **W. E. Gundlach** and **H. W. Wight, Jr.**, named asst. sales managers, Philadelphia Branch.

R. L. Hatch and **R. G. Worman**, appointed to supervisory positions,



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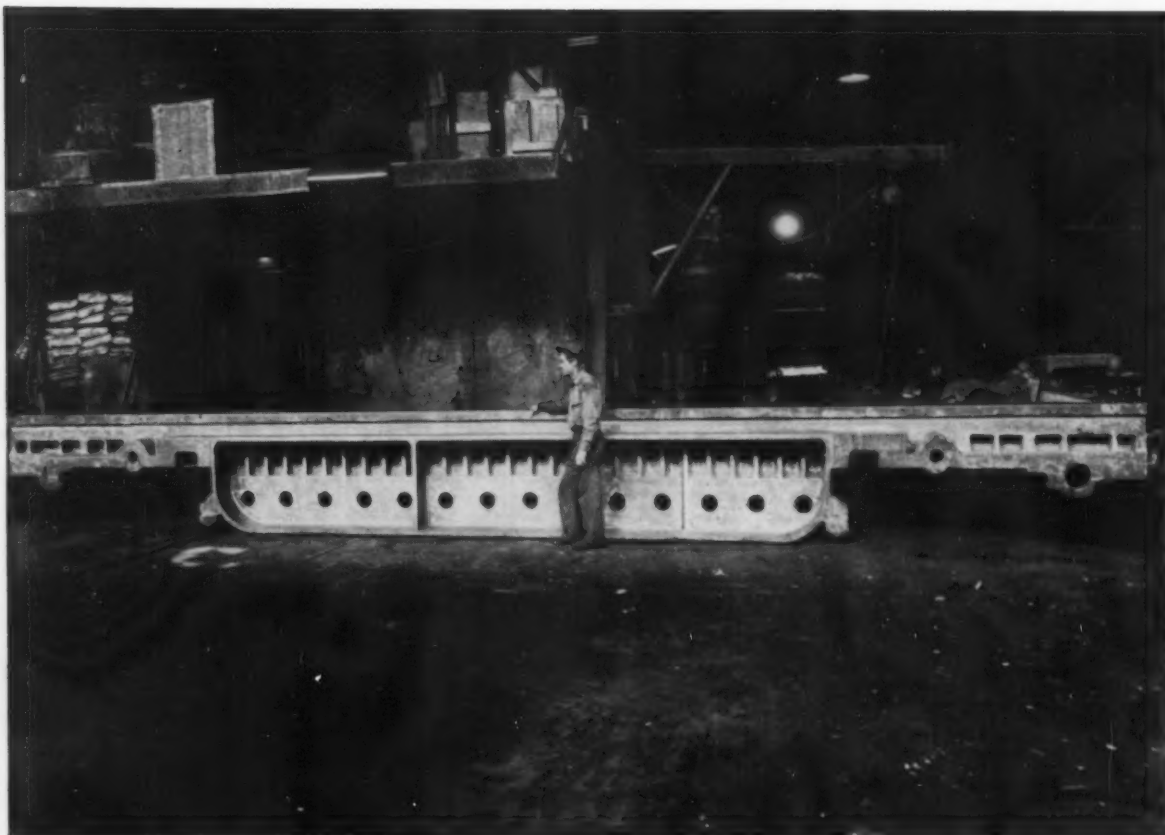
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Chemical and Metallurgical Div., General Electric Co., Pittsfield, Mass.; **Dr. S. F. Strause**, named quality control specialist.

R. A. de Matteo, II, appointed manager, export sales, Anaconda Wire & Cable Co., New York.



M. W. Stevenson, appointed vice president, sales, Railway and Mine Div., National Malleable & Steel Castings Co., Cleveland.

C. L. Thompson, appointed general sales manager, Magnesium Co. of America, E. Chicago.

J. W. Bosley, appointed manager, aluminum sales, Hill-Chase & Co., Inc., Philadelphia.



K. L. Selby, appointed vice president, engineering, Railway and Mine Div., National Malleable & Steel Castings Co., Cleveland.

William Peters, named manager, New York City branch office, American Air Filter Co., Inc., Louisville, Ky.

Dr. Ira Kukin, appointed research director, Belleville, N. J., plant, L. Sonneborn Sons, Inc., New York.

Henry Zaccaria, appointed manager, Purchasing Dept., Philadelphia plant, International Resistance Co.; **E. M. Corson, Jr.**, appointed sales manager, Computer Components Div.

B. W. Dutter, appointed technical representative, Pittsburgh area, Cowles Chemical Co., Cleveland.

W. C. Germo, appointed sales representative, Leschen Wire Rope Div., H. K. Porter Co., Inc., St. Louis.

D. M. Hennessy and **J. R. Devitte**, named secretary and director of purchasing, respectively, Reflectal Corp., subsidiary of Borg-Warner Corp., Chicago.

Charles Benton, Jr., appointed general manager, Military Products Div., International Business Ma-

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chines Corp., New York; **C. F. McElwain**, named director, manufacturing services, IBM World Trade Corp.



R. C. Hobson, named vice president and general manager, Industrial Div., National Malleable & Steel Castings Co., Cleveland.

D. A. Anderson, appointed district sales manager, Duff-Norton Co., Pittsburgh.

P. C. Rossin, appointed technical director, Refractomet Div., Universal-Cyclops Steel Corp., Bridgeport, Pa.

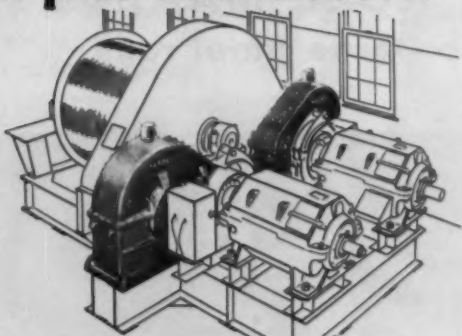


G. F. Grace, appointed sales manager, Industrial Chain Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.

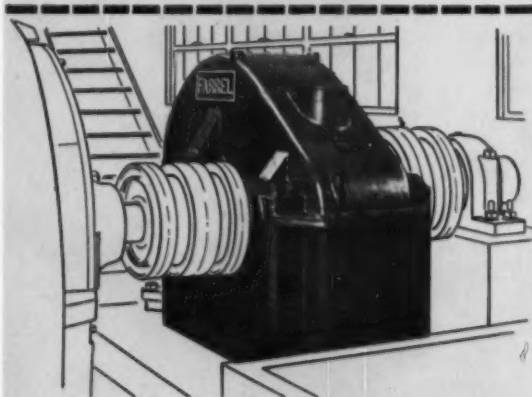
W. L. Hayes, appointed asst. district manager, Detroit branch, Pittsburgh Crucible Sales Div., Crucible Steel Co. of America, Pittsburgh.

D. V. Watson, appointed sales engineer, Chicago district office,

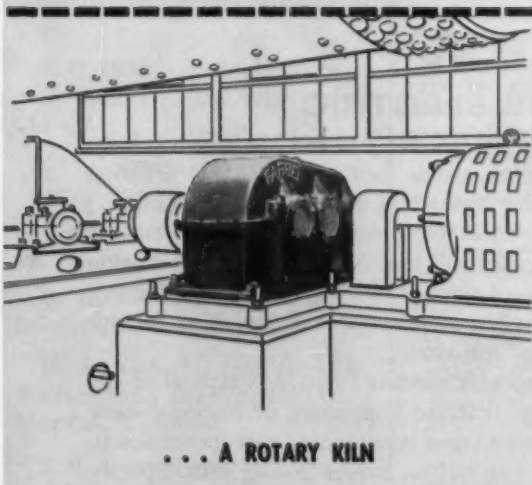
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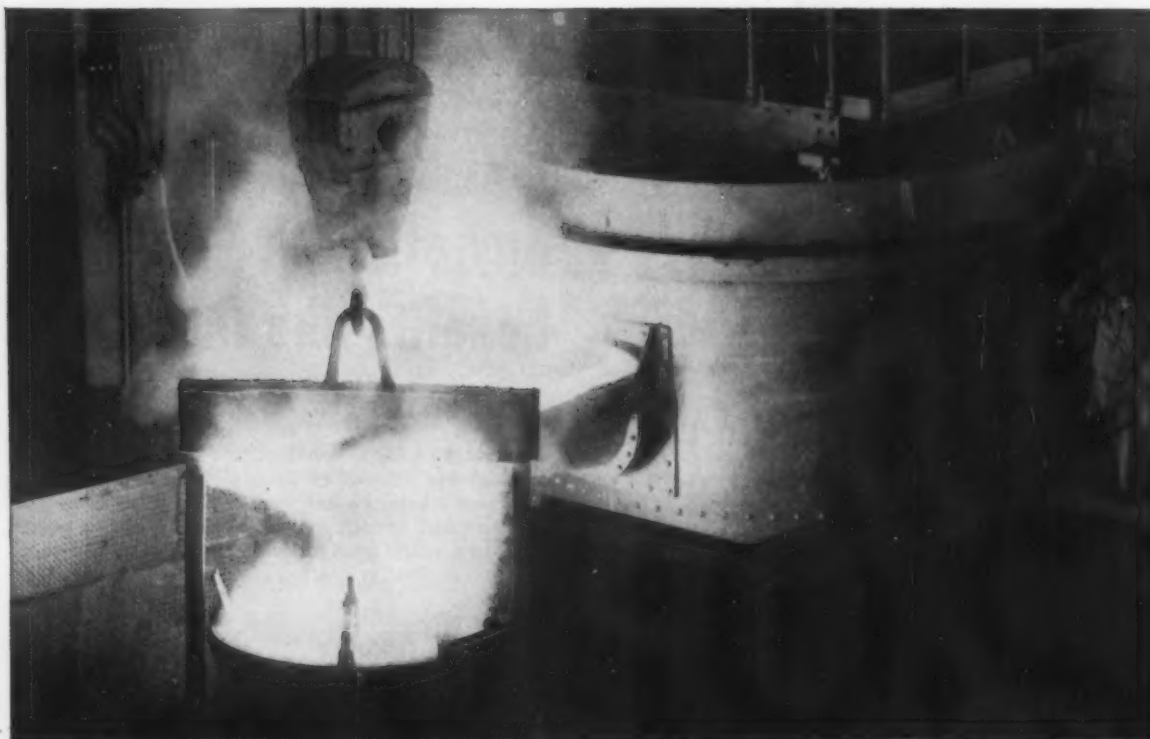
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General Steel Castings Corporation: General Offices, Granite City, Ill.

Plants: Granite City, Ill. — Eddystone, Pa. — Avonmore, Pa.

Formsprag Co., Warren, Mich.; **F. E. Huber**, appointed sales engineer, Cleveland headquarters.

R. P. C. Rasmusen, appointed electrical engineer, Miller Electric Mfg. Co., Inc., Appleton, Wis.



E. J. Byrne, appointed sales manager, Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., Tonawanda, N. Y.

J. F. Abels and D. J. Powers, named sales representatives, Wichita and Indianapolis district offices, respectively, Allis-Chalmers Industries Group.

O. K. Moynihan, appointed asst. superintendent, Cold Strip Dept., Wheeling Steel Corp.'s Steubenville Works.

R. O. O'fill, named advisory engineer, Lindberg Industrial Corp., Chicago.

OBITUARIES

W. J. Cook, 68, retired president, Hunter Spring Co., Lansdale, Pa.

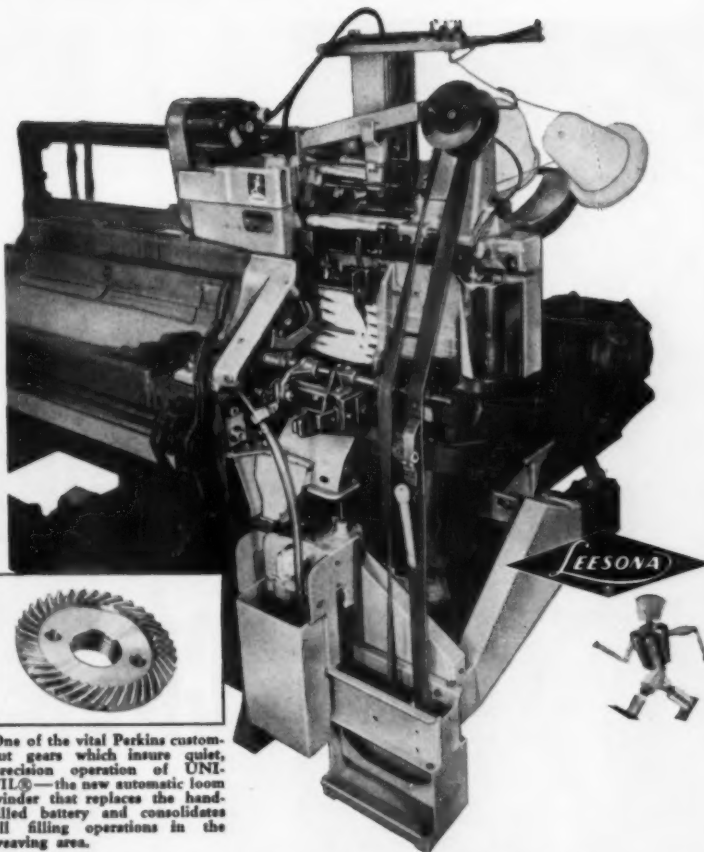
R. H. Glover, chairman of the board, The Anaconda Co.

H. L. Gobeille, vice president, Marine Dept., The Cleveland-Cliffs Iron Co., Cleveland.

S. K. Towson, president, The Elwell-Parker Electric Co., Cleveland.

J. J. Ryan, 29, development engineer, Struthers Wells Corp., Warren, Pa.

C. R. Ross, 32, field representative, Goodyear Tire & Rubber Co.'s Industrial Products Div.



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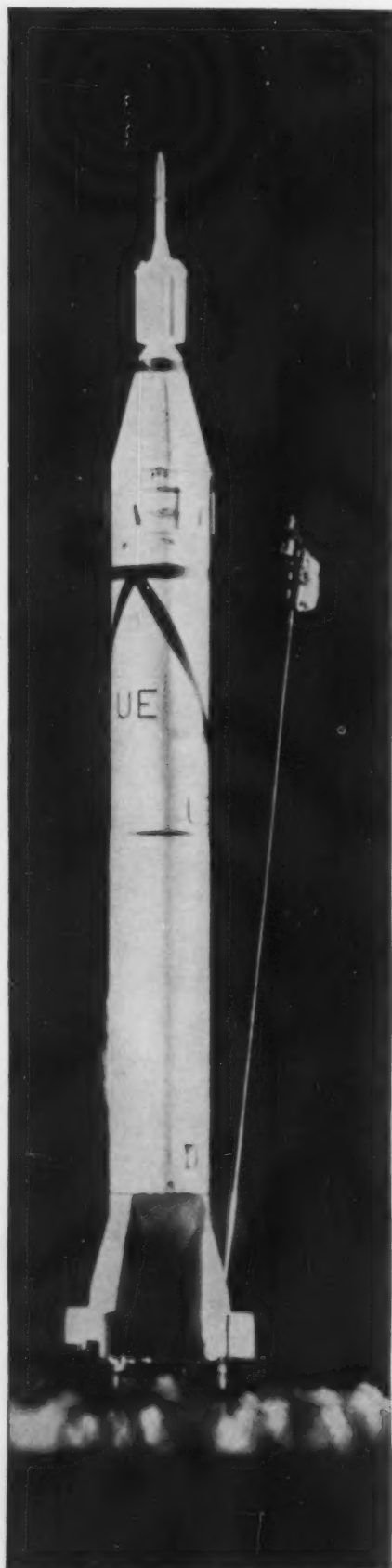
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Stainless Steel is highly ductile. It is readily formed into desired shapes by cold-forming, drawing, and bending operations. It provides low thermal expansion and is highly resistant to atmospheric corrosion, erosion, and oxidation at high temperatures.

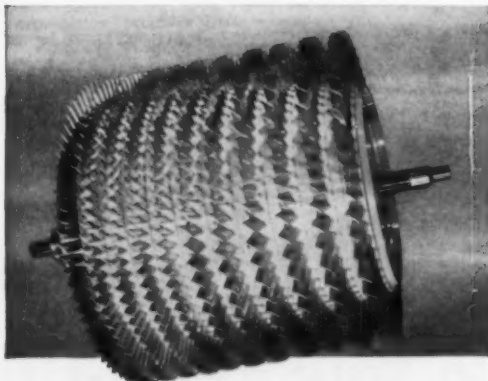
Republic is the world's largest producer of stainless, heat-resisting, and alloy steels. As rapid developments in the fields of supersonic aircraft and missiles increase demand for these high-strength, select formula steels, Republic is keeping pace through research and new production facilities.

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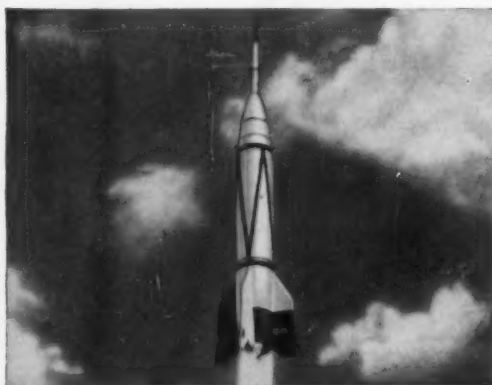
Official U.S. Army photograph shows launching of Jupiter-C Missile and "Explorer I" Satellite from Cape Canaveral, Florida, 10:48 PM, EST, January 31, 1958.



"Explorer I" is positioned on spin launcher. The satellite is spin-stabilized in much the same manner as a rifle bullet. Rotational spin of more than 700 RPM was started on the ground before the satellite was launched. In this Official U. S. Army photograph, the striped area at the top of the Explorer indicates the nose cone fabricated from Republic ENDURO Stainless Steel, Type 430.



REPUBLIC ALLOY STEEL provides high strength and dependable toughness in jet engine compressor rotor discs. In Pratt & Whitney's J-57 jet engine, Republic Hot Rolled Alloy Steel, AMS 6415 (AISI 4340), furnishes the highest strength values—plus an exceptionally high strength-to-weight ratio that permits the design of thinner, lighter sections to save weight and hold down size without sacrifice of strength or safety. The discs are machined from forgings by the Jet Division of Thompson Products, Inc. Forgings are supplied by Wyman-Gordon Company.



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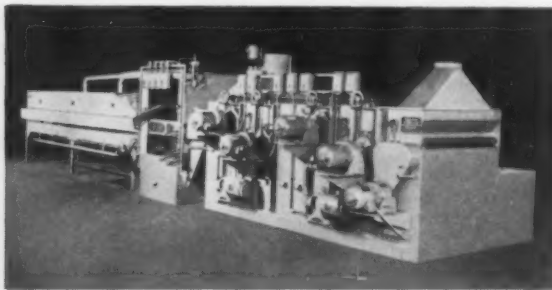
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A better start for your finish



Automatic Tape Control Slashes Milling Bottlenecks

Milling machines equipped with tape controls are doing some remarkable things in the aircraft and missile field.

Besides turning out complex parts in less than half the time it used to take, they trim tooling time, tool costs and scrap to the bone.

■ Tape-controlled milling machines are proving a real boon to aircraft and missile builders. With today's emphasis on higher strength and less weight, many sheet-metal assemblies have been replaced by intricate, machine sculptured parts. Even with fancy tools and fixtures, it's often beyond a human operator's ability to control machining operations on such parts without having scrap rates soar.

This is where tape control takes over. It accurately reproduces part after part to close tolerances and speeds machining. It also cuts way down on pre-production tooling time as well as on tool cost.

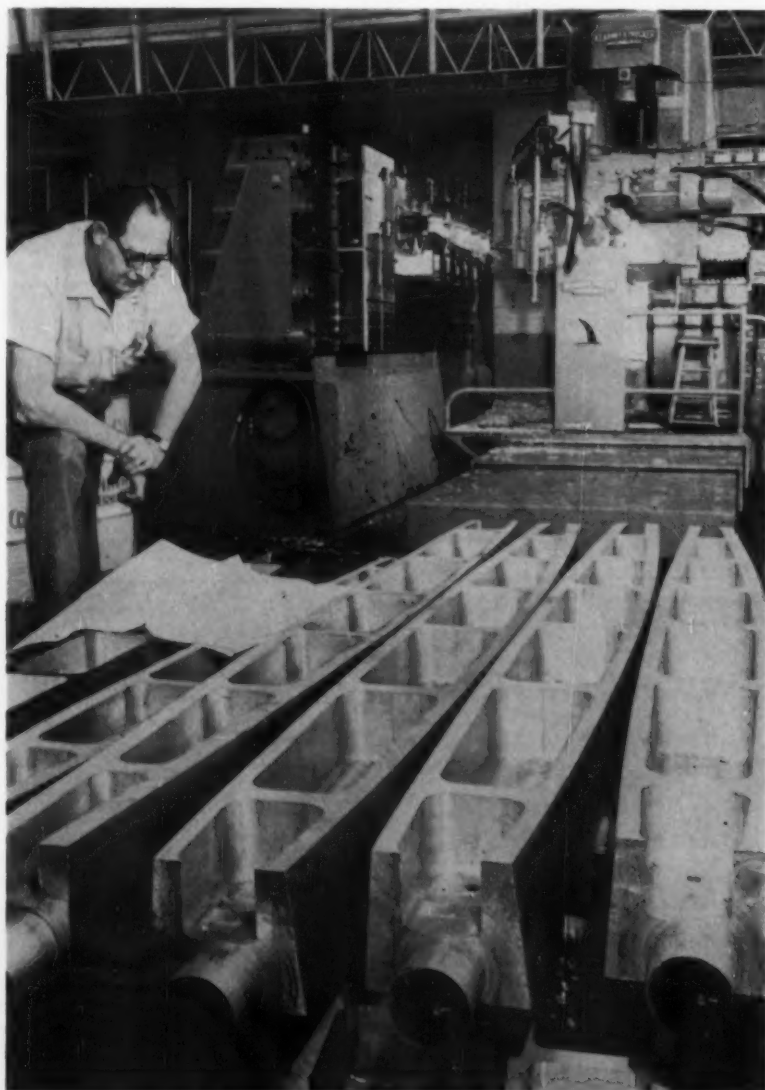
A good example of these benefits is reported by Northrop Aircraft Co. The firm uses a tape-control system made by the Controls Section, Bendix Aviation Corp., Detroit, to produce a complex root rib for the Snark missile, and a honeycomb die cavity for the T-88 jet trainer.

Important Savings — In making the Snark root rib, a tape-controlled Kearney & Trecker three-axis milling machine performs seven pocket milling operations on a 75S aluminum billet. Spindle speed is 1390 rpm, with a feed rate of 10 ipm. As shown in Table I, tape control saves

57 pct in tooling time and 64 pct in machining time over a tracer-controlled machine of the same type.

On the T-88 honeycomb die cavity, the tape-controlled three-axis

milling machine performs a continuous contour milling operation on a metal blank. As shown in Table II, tape control results in a saving of 77 pct in total tooling and machin-



FINISHED WORK: Tape-controlled milling machine cuts seven pockets in the root rib in 64 pct less time than tracer-controlled machine.



TAPE CONTROLS IT: Milling cutter is guided automatically through all its paces. Tape control eliminates human error, reduces scrap, and cuts total machining time on the root rib by about 64 pct.

Table I | Time Saved on Snark Root Rib

	Tape-Controlled Milling	Tracer-Controlled Milling
Type of Tooling	Tape	Pattern
Tool Weight, lb	1	480
Template Design, hours	0	150
Template Manufacture, hours	0	250
Planning, hours	144	0
Tape Preparation, hours	7.5	0
Total Tooling Time	151.5 hours	400 hours
Machining Time, hours		
Set up	0.66	1.0
No. 1 Rough Operation	1.33	4.0
No. 2 Rough Operation	1.33	4.0
No. 3 Finish Operation	2.50	7.3
Total Machining Time	5.82	16.3

ing time and cuts lead time from 49 days to 3 days.

Data needed to make the root rib and honeycomb die cavity are of two general types: dimensional data defining part geometry; and information concerned with cutting aspects of the job, such as cutter size, feed rates, and sequence of cuts.

A process sheet is used to organize this information for input to a computer. When the sheet is properly filled out, all the information for the computer is arranged in proper sequence.

Then to Tape—A process tape comes next. The tape, which contains exactly the same information as the process sheet, is prepared on an electric typewriter (Flexowriter) equipped with a tape reader and tape punch.

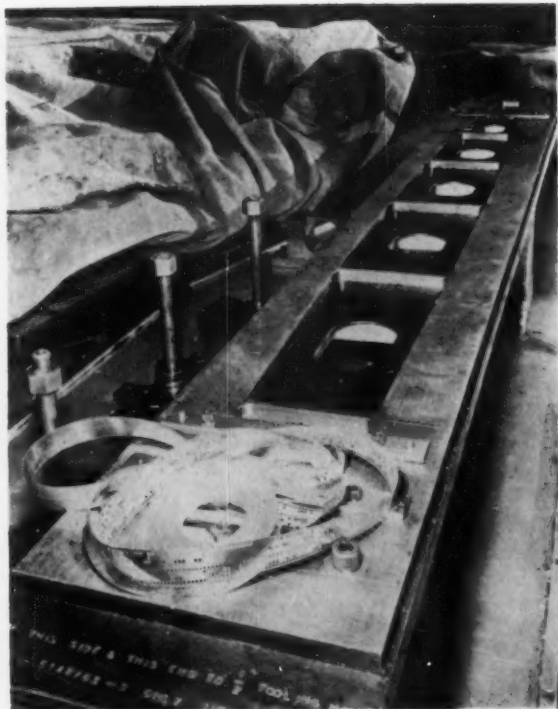
The first process tape is checked for accuracy by inserting it in the motorized tape reader. At the same time, the original process sheet is manually typed again to make a second tape. As each key is struck, the tape punch operates and punches the verified code in the second tape if the associated code agrees with that punched in the first tape. If the codes do not agree, the punch will not operate and the keyboard locks. When the error has been found and corrected, punching of the second tape can proceed.

The process tape, containing in condensed and coded form all necessary data to produce the part, is then fed into a digital computer. The computer interprets the data, carries out all the necessary computations, arranges the results in the required format, and punches a control tape for the milling machine.

Stores Data — The computer makes its calculations based on data received from the process tape and stored on a magnetic memory drum. Data beyond the capacity of the drum, as well as information for analytical curves, are stored on magnetic tape in an auxiliary storage unit and fed to the computer as



PUSHBUTTON CENTER: Control console of the Bendix tape system is used by the machine operator to vary feed rate, locate the cutter at the set-up point.



TOOLING COMPARED: The 1-lb tape which now controls all milling operations on the root rib sits atop the 480-lb tool formerly used.

needed. The computer used in the tape preparation system is a small, general-purpose digital Bendix unit.

Finally, the control tape is mounted on a photoelectric reader in the machine control unit. Spindle speed and cutter location are manually selected on the control console. Depressing the tape control button on the console puts the machine into operation. The machine control unit automatically picks up information from the control tape and controls the milling machine to generate all of the required machining motions. The milling sequence ends with automatic withdrawal of the cutter to a clearance plane.

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Table II | Time Saved on Honeycomb Die Cavity

	Tape-Controlled Milling, hours	Original Method, hour
Planning	16	8
Calculating	40	20
Tape Preparation	12	0
Loft Drawing	0	40
Station Master Template		30
Plaster Mold Template		42
Rigging Template and Fairing		60
Plaster Splash		80
Male Casting from Plaster Splash		100
Cast Metal Die		110
Machining Die	24	0
Finish Grind Die	30	60
Total Tooling and Machine Time	122	550
Savings With Tape Control		428 hours
Lead Time	3 days	49 days

Radio Speeds Scrap Handling

Mechanization is only the beginning in efficient scrap processing.

It takes both good layout and fast communication to get the most out of modern equipment.

■ With so many diverse and widely-separated operations in scrap processing, how can you coordinate the work? A portable radio is what one plant superintendent uses to keep up with the job.

A radio network is just one of the up-to-date methods used at the combined facilities of Alter Co. and Alloy Metal Products, Inc., Davenport, Ia. Every facet of the newly built 42-acre plant is keyed to high production.

Check By Radio—A 60-ft Fairbanks-Morse scale not only weighs scrap received by truck, but marks grade, price and total value on the face of the check, as well as on multiple copies of scale tickets. When the weighmaster receives each load, he radios a description of the type of scrap to the area to which it will be consigned.

Any discrepancies are radioed in return so that adjustments can be made. The same radio setup serves the 150-ton Fairbanks-Morse track scale which weighs all entering carloads of scrap.

Also linked into the radio network is the barge terminal. The terminal is geared to handle 1000 gross tons of scrap per day for

shipment to points on the Mississippi and Ohio Rivers.

Baler Gets Tonnage—In an 8-hour shift, a model 3000 Harris baling press processes over 350 tons of scrap. For feeding the press, a mill-type overhead crane is equipped with a 65-in. eight-coil electro-magnet and an orange-peel bucket. Matching the operating cycle of the press, the crane handles unloading, feeding of the press, and reloading the finished bundles into railroad cars.

The baling unit can reduce three automobiles to a bundle of scrap 60 x 60 x 24 in. in 90 seconds. Since bundles this size are too large for the charging doors of most steel mills, normal bundles contain only one automobile.

From the air-conditioned control center atop the press building, the operator can view all operations and control production through a pushbutton panel.

Mechanize Each Step — In addition to the baling operations, the plant uses many shears and flame cutters for preparation of other types of iron and steel scrap for foundry and steel mill use. By mechanizing each step in scrap preparation, the company cuts operating costs to the bone.

Supplying secondary nickel alloys for steel mills, foundries, investment casting plants, Alloy Metal Products specializes in careful analysis of incoming nickel scrap.

Test For Analysis — The material, after weighing and tagging, is sorted by qualitative chemical tests, spark identification and other specialized tests. Scrap not conforming to a specific grade is sent to the laboratory for complete chemical analysis. In addition to the wet laboratory, the company uses an x-ray quantometer and a spectrograph.

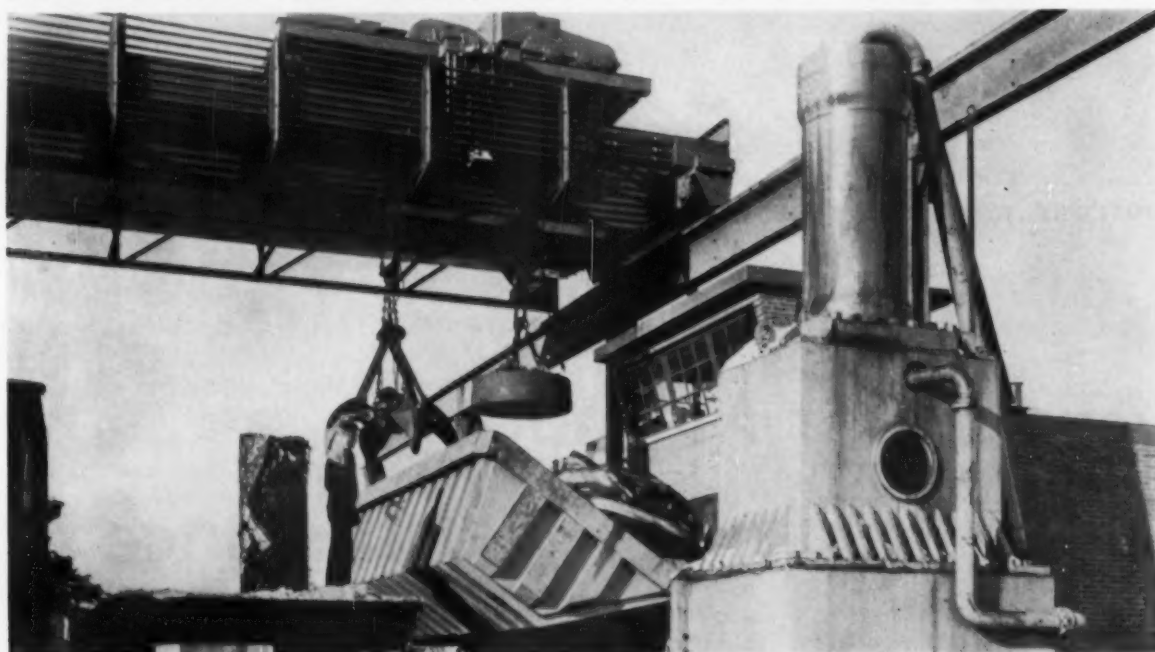
The heat making department



CONTROL BY RADIO: Yard foreman reports on quality of inbound material as he controls unloading.



EASY WEIGHING: Truck scale building at plant entrance gives weighmaster a clear view of traffic.



BALING PRESS: Hopper dumps automobile body into accumulator ram chamber. Electro-magnet and

orange-peel bucket match operating cycle of press. Bundle weighs 2400 lb, measures 20 x 24 x 60 in.

blends the material into heats of 1200 to 6000 lb. As many as 16 different alloys of nickel are blended to form a standard alloy. After melting, the material is cast into pigs, shot or special shapes depending on use.

Stress Maintenance—Occupying a 10,000-sq ft building, the plant

maintenance department uses the latest power tools and repair equipment for proper servicing of all production machinery and material handling units. Service crews depend on the radio network to keep up with service requests.

Each crane and switch engine, in addition to each department, is coordinated through the Motorola

frequency modulation radio network. Future plans call for the installation of a closed-circuit television system. This will enable executives to view all operations within the plant without leaving their desks.

A newly constructed office building has been planned for departmental expansion when needed.



PRECISION WORK: Operator positions gages by remote control. Four fingers on each gage measure alignment.

Alignment Methods Hold Precision Over Distance

Normally, tolerances ease as scale expands. But in aligning test tracks for supersonic rocket sleds this doesn't hold true — speed magnifies the need for greater precision.

Special techniques had to be developed for holding a few thousandths over a distance of miles.

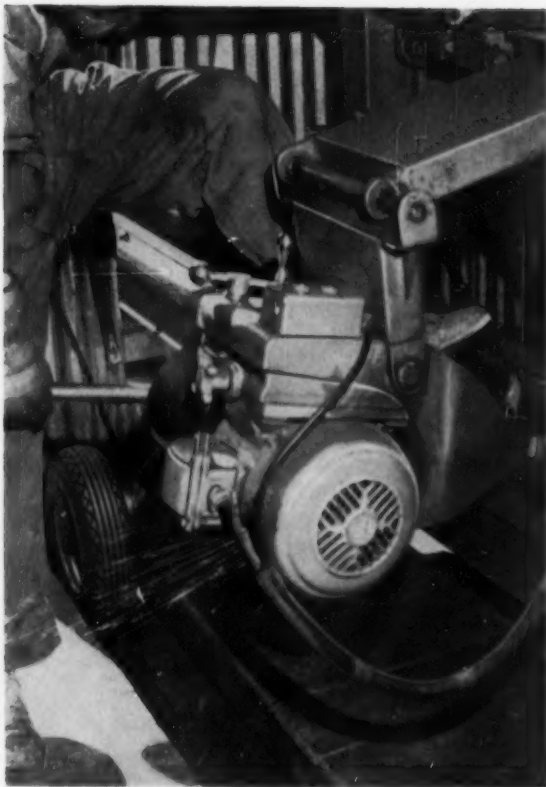
And all of it had to be done on a production basis. The methods may suit other fields.

Alignment of the final section of a rocket-sled test track early this year will mark a milestone in precision over long distances. Designed for testing rockets, aircraft and missile components at speeds up to Mach 4, the rails of this ultra-high speed track are accurate to ± 0.005 in.

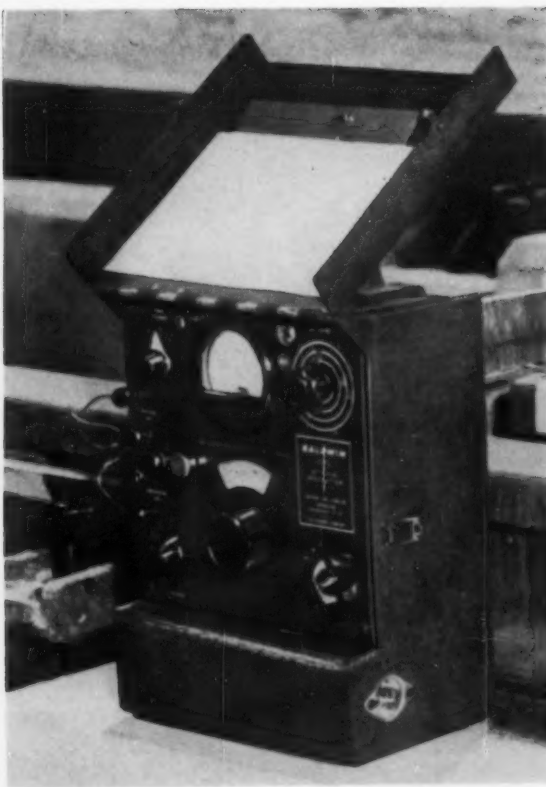
The track extends over a 7-mile course at the Air Force Missile Development Center, Holloman Air Force Base, N. M. According to Delta Design Engineers, Inc., San Diego, the firm that's doing the job, the requirements are so tight

that straight line intervals as short as 100 ft could not be used. Topographical curves had to have a radius of greater than 2-million ft.

Close at Every Step—Further demands met by Delta are the grinding of welded track joints to within ± 0.0025 in. of adjoining rail surfaces, stretching the heavy steel track with a 100-ton jack to nullify the effect of temperature variations, and the installation of interrupter blades to measure test speeds. The speeds of rocket sleds are clocked



DESIGN FOR JOB: Belt grinder faces track welds. Follower guides on surface to control depth.



SET UP TENSION: Strain gage mounted on rail measures tension during stretching with 100-ton jack.

with an accumulated error of less than 1 in. in 7 miles.

To obtain a perfectly smooth surface, each 2-mile section of track is welded into one piece, then stretched as much as 5 ft with the hydraulic jack. Thus stretched, the rails are relaxed at 120°F and under tension at temperatures below 120°F.

Stress Reasons—Safety in testing makes the ± 0.0025 -in. tolerance essential at all welded joints. Even a small misalignment, encountered by a rocket sled traveling at several times the speed of sound, could cause lateral accelerations to destroy the sled, and perhaps a large portion of the track itself.

The interrupter blades, installed every 13 ft along the track, are positioned at ± 0.001 -in. tolerance, thus insuring accurate measurement of acceleration, velocity, and position of rocket sleds during test runs.

Such precision alignment re-



TAPE SETTING: Technician adjusts temperature compensator so that interrupter blades can be installed using direct readings.



ALIGN WITH TAPE: Precise positioning of interrupter blades insures accurate following of rocket sled motion.



MOUNTING METHOD: Fixture positions interrupter blade mounting studs which are shot into reinforced concrete beam.

quires instruments to allow technicians to take a large number of precise readings with speed and accuracy. With no suitable "off-the-shelf" equipment, Delta designed and built units for the purpose.

The equipment enables rapid alignment of the track in progressive 100-ft intervals, utilizing pre-established U. S. Coast and Geodetic Survey markers adjacent to the track as reference points.

Use Dial Indicators—After a line of sight is set up between two 100-ft reference markers, a special track gage with dial indicator fingers is mounted on the track. With remote control the instrument operator positions the track gage and aligns it with the line of sight. He feeds in any deviations for earth's curvature or slight topographical curves.

Track workers have only to adjust the track vertically or horizontally to make each dial indicator read zero and a section of track is thus aligned. This precision work is done at night due to the refraction effects of daytime temperatures.

Delta designed and built the grinding machine for smoothing off the inside and outside radii and plane surfaces of all track welds. The unit employs two electric-powered belt grinders. Each is mounted on counterbalanced movable arms to keep the grinder spindle parallel to the track surface. A follower on each grinding head controls the depth of grinding cut by guiding on the surface of the track.

Topographical Value—The extreme accuracy of the 7-mile "yardstick," according to Delta, would make it possible to determine variations in the earth's crust.

The experience gained in the alignment of the track, Delta Design Engineers point out, may be useful in other fields. The rocket sled track alignment methods could well be adapted to the precision installation of missile and satellite tracking equipment. Railroads may well find it profitable to use these methods for precision alignment of their rails.

Rapid Borer Does Work of Three Machines

Boring smooth holes out of solid metal at rates upward of 30 ipm is the specialty of this new machine.

Here's a multiple-operation job it took away from a lathe, a grinder and a honing machine.

It's noteworthy when one machine tool does a job that formerly called for three different machines, and especially when the job is done eight times faster than before.

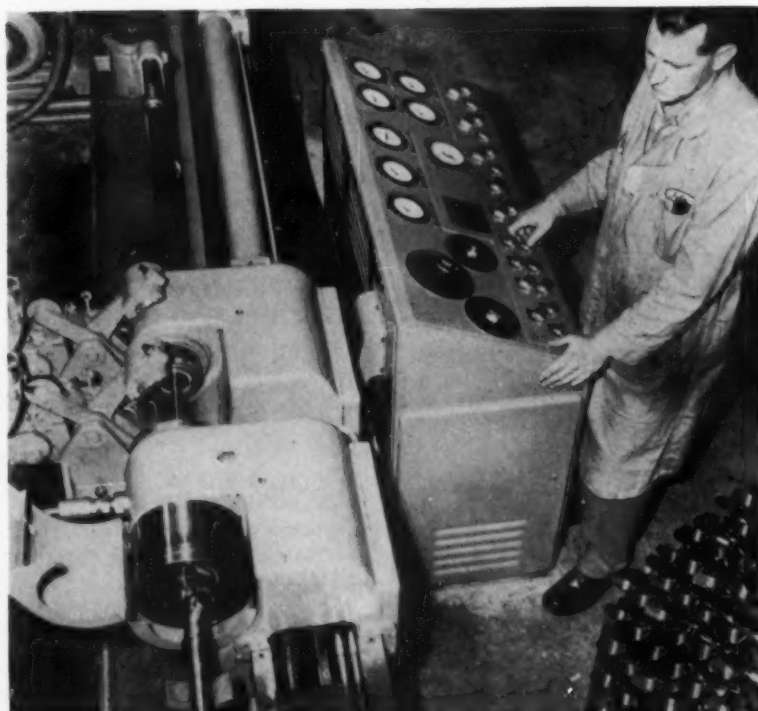
That's what happened when the Peter J. Salmon Co., Glenside, Pa., tried its new LeBlond-Carlstedt Rapid Borer on a forged steel aircraft part. The 14 $\frac{7}{8}$ -in. long workpiece is made of 4130 alloy and has a hardness of 39 to 43 Rc.

In five fast operations the new machine finish bores the part to within ± 0.001 in. on length and concentricity. Surface finish is between 25 and 30 microinches.

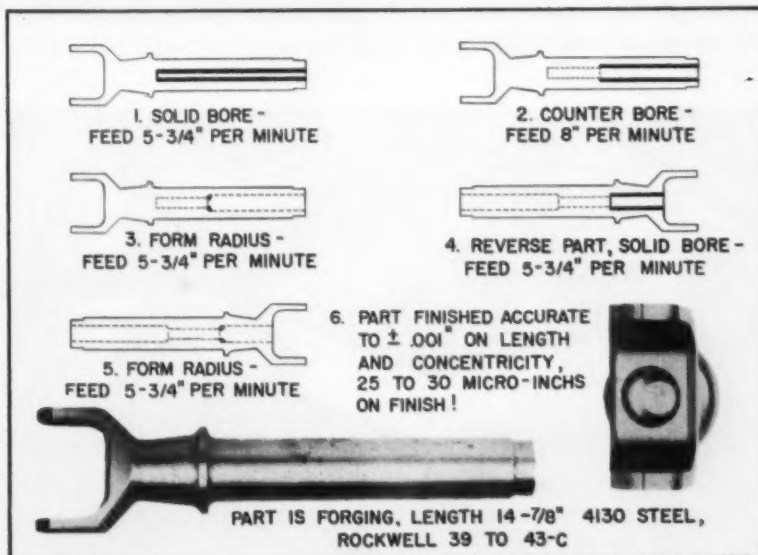
The former method involved rough drilling, reaming, radius forming, grinding and honing. Three separate machines were used. Now the part is processed in two quick setups. The first involves solid boring a $\frac{5}{8}$ in. diam hole, counterboring a portion of it to a 1 in. diam, and forming a radius at the bottom of the counterbore.

Turn It Around — The part is then turned end for end and solid bored to a 1 in. diam for the remainder of its length. The final step forms a radius at the bottom of this bored section.

Simplifying the operation has reduced rejects, according to Peter J. Salmon, president of the firm. He also finds that unskilled operators can be trained quickly to operate the new machine, which cycles automatically.



EASY WORK: Beyond loading and unloading, operator has little to do. The machine features automatic cycling.



FIVE QUICK STEPS: That's all it takes to bore the holes and form the radii in this steel forging.

Stainless Clad Plate: Don't Look at Cost Alone

By D. T. Smith—Composite Div., Jessop Steel Co., Washington, Pa.

A lot has been said about the economy of stainless clad steel, and this is one of the main reasons for its growing use.

Dig a little deeper, though, and you'll find it offers a number of technical advantages, too—properties that make it the best choice for a host of service conditions.

■ Many people still think of stainless clad plate in terms of economy alone. Actually, it offers a number of technical advantages as well.

Stainless clad steel is a layered composite plate. It consists of a low carbon or alloy backing layer—usually accounting for 80 to 90 pct of overall thickness—which gives strength and rigidity, bonded to a layer of corrosion-resistant stainless steel.

Many pieces of equipment—pressure vessels, for example—are sub-

ject to vibration or rotation, cyclic temperature changes which may cause expansion and contraction, and variations in pressure which may cause flexing of the plate. Because the clad product's mild carbon steel backing has a high modulus of elasticity, it remains ductile when subjected to cyclic stresses and doesn't work-harden or crack.

Good Heat Conductor—Stainless clad steel offers the ductility of carbon steel in combination with corrosion resistance. The high thermal conductivity of stainless clad plate is most useful where fast, uniform heating or cooling is desired.

The clad material is not a universal substitute for solid stainless steel. Its use is limited to certain high temperature applications, and to some jobs where a high strength-to-weight ratio is needed.

Where corrosive attack and/or temperature may be high, the use of clad plate $\frac{3}{8}$ in. and under, with

20 pct cladding or less, may be economically marginal. But to prevent iron contamination and discoloration of product, as in holding fruit juices, beer and certain organic acids, light-gage clad plate is justified in terms of service life as well as in material and fabrication cost.

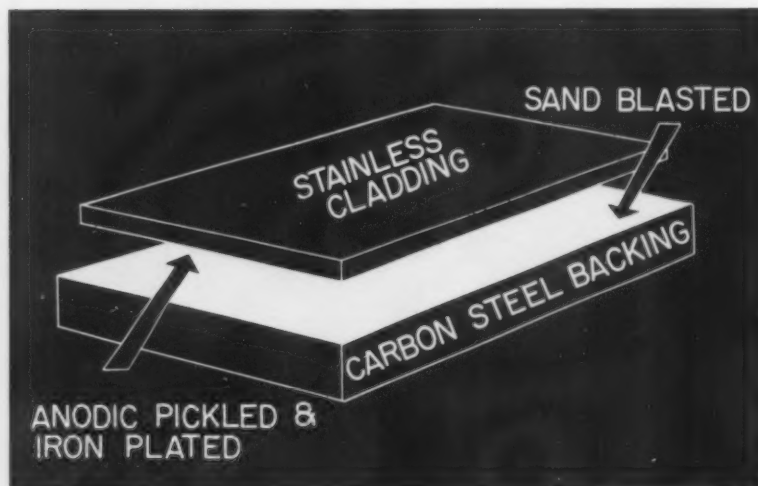
Limited service life at lower cost may be useful where rapid obsolescence is certain and where equipment may be abandoned in military campaigns.

Big Savings—In many applications where solid stainless plate is being considered, stainless clad plate will do a good job at lower cost. Plates clad with the widely used Type 304 stainless, for example, offer a saving of about 18 pct with 20 pct cladding, and a saving of 33 pct if 10 pct cladding is used. Clad with Types 316 and 317 and with heat resistant 309S and 310, savings range from 33 to 50 pct. In the straight chromium 400 series 20 pct clad plates, savings are 10 to 15 pct.

There are many applications where corrosive attack is mild and where strength and rigidity are paramount. An example could be 1/16-in. Type 410 or 405 cladding on 9/16-in. backing, making a $\frac{5}{8}$ -in. overall thickness 10 pct clad plate; this affords about 28 to 31 pct saving over the respective grade of solid material.

The same general range of savings applies to both light and heavy plate, all the way from 3/16-in. to 1½-in. thickness.

How to Weld It—In welding stainless clad plate, some intermixing of the stainless weld deposit and the mild carbon backing steel must



READY FOR BONDING: Routine methods prepare surfaces for bonding.

take place. Excessive dilution can cause embrittlement at the carbon-stainless weld metal interface.

Also, excessive migration of mild carbon steel into the weld metal might lower corrosion resistance of the weld. But when the precautions to minimize intermixing of the two metals are understood and used, dilution should have no bearing on finished quality and cost.

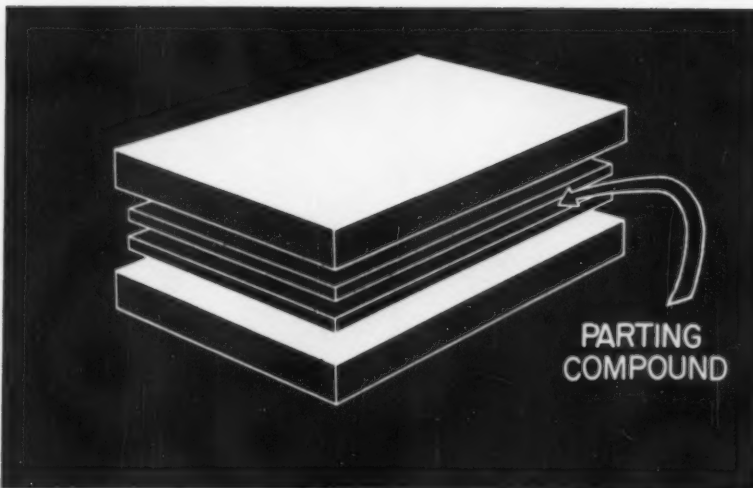
Service conditions dictate the amount of dilution that can be tolerated. For fabrications made of 1/2-in. clad plate or under, which are subject to mild corrosion and temperature, and where there's no vibration or other condition that would cause repeated flexing of the welds, an all-stainless weld may be used.

For Rough Service—In fabrications subject to flexing, high pressure, thermal distortion, or vibration, regardless of plate thickness, the backing steel should first be welded with mild carbon steel, or with a composition similar to the backing steel if the backing is an alloy type. The root bead should be chipped down to solid metal from the clad side to eliminate any unfused weld. Completion of the joint should then proceed from the clad side, using the proper stainless steel welding rod.

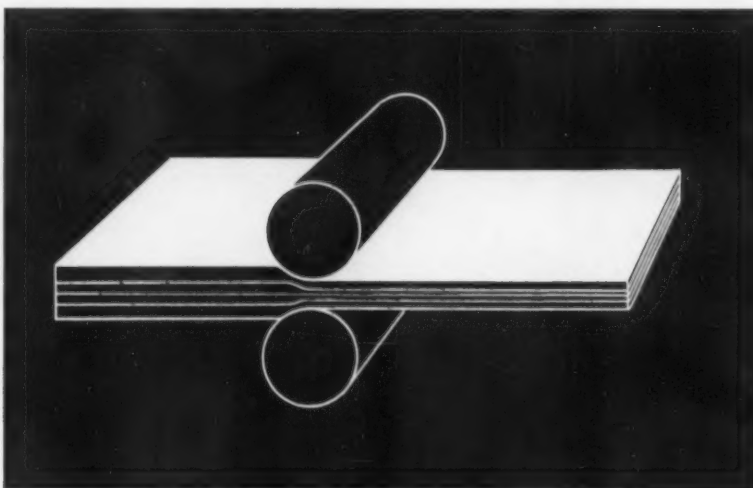
In light-gage fabrications the cost of welding from both sides with mild carbon steel and stainless steel may be somewhat higher than in welding solid stainless plate of the same gage. However, the savings in weld deposit coupled with the lower initial material cost of clad plate combine to yield a lower finished cost.

Welding of heavy clad plate is decidedly more economical than welding solid stainless; 80 to 90 pct of the weld is carbon steel. The time saved by the faster rate of deposition of the carbon steel weld is also significant.

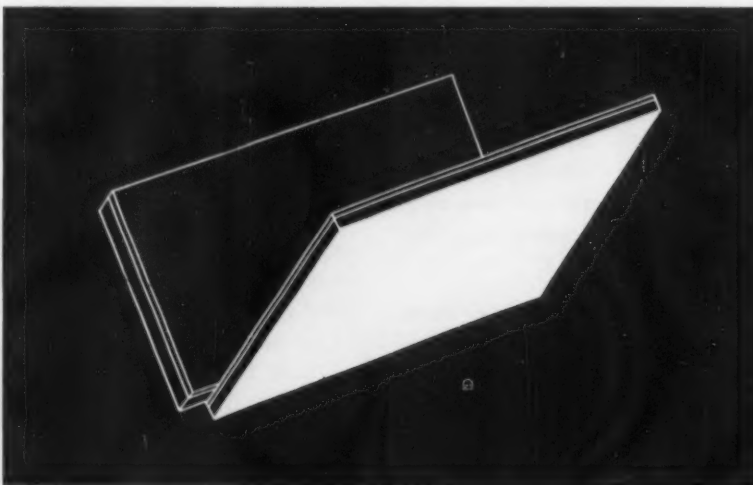
Burning and machining of stainless clad plate are simpler and faster, and less power is acquired to shear and form clad plate.



ASSEMBLE IN PAIRS: Compound keeps stainless surfaces from sticking.



BONDING STEP: Two plates are rolled at the same time for strong bond.



EASY PARTING: Completed stainless clad plates separate easily.



FAST REBUILDING: Operator applies hard-facing alloy on roller guide using oxy-acetylene flame.

Hard Face Rollers For Low-Cost Service

Guides on rolling mills are made to take a lot of wear. But, no matter how durable they may be, constant moving contact still takes its toll.

Reclaiming rollers by hard facing can bring replacement costs down. Likewise, maintenance costs can be cut by choosing the right alloy for the job.

It can save on machining time and bring longer service life.

Stainless steel rod is near white-heat on entering the forming rolls of a bar mill. Such temperature adds to the punishment of metal-to-metal contact on roller guides. The heavy wear dictates replacement of guides at regular intervals.

One producer of stainless steel rod uses hard facing to reclaim worn rollers whenever possible. It's less costly than replacement with new guides.

In addition, there's less machining required. New guides must be

machined on both inside and outside diameters, whereas reclaimed guides require grinding on the outside diameter only.

Grind Clean First—In applying hard facing to wearing surfaces, the producer, Stainless Steel Div., Jones & Laughlin Steel Corp., Detroit, grinds the worn rollers down to clean metal. Any surface imperfections must be removed to insure sound metal surface.

The welding setup consists of a firebrick-lined box mounted on a

welding positioner. Mounted on an arbor, the roller in process is slowly rotated by the welder positioner shaft. The operator controls the shaft rotation through a foot switch.

In choice of alloy, ease of application was a major factor. By using Colmonoy No. 6 alloy, the company gets a 65 pct reduction in welding time as compared with a chromium-tungsten-cobalt alloy formerly used.

Stress Choice of Alloy — Colmonoy No. 6 is a nickel-base material containing chromium borides. Through its use, three rollers are reclaimed in the same time it took to weld one previously.

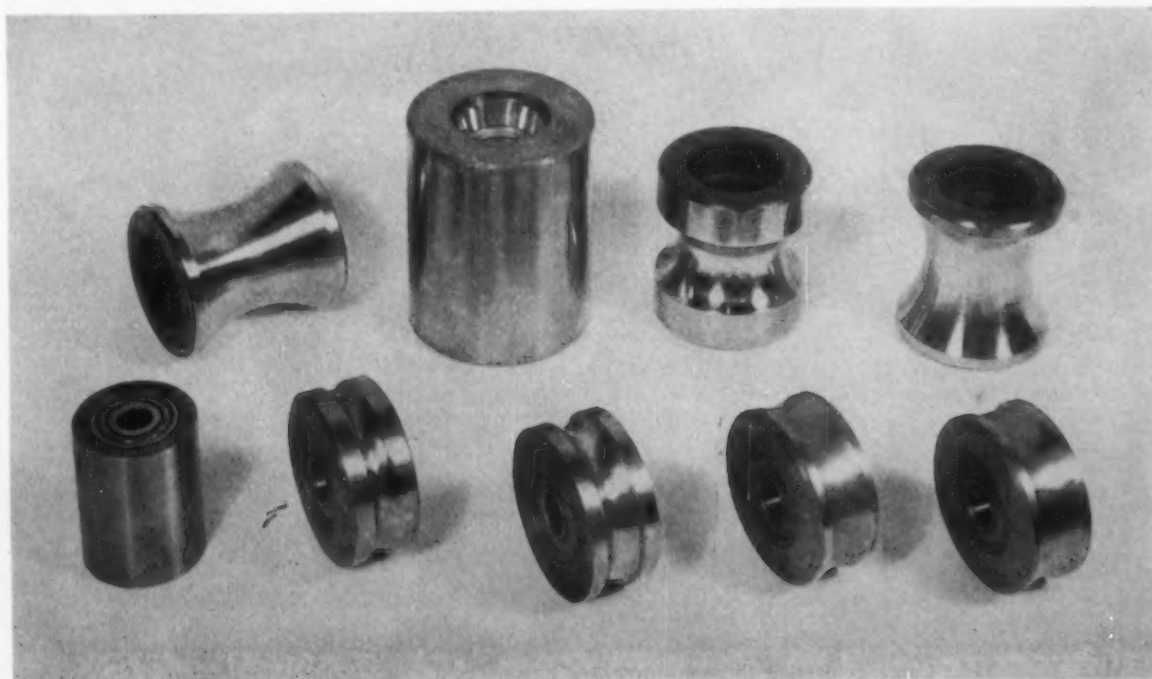
The alloy is applied by heating with an oxy-acetylene torch. Using a neutral flame, the technique is similar to brazing where the overlay is tinned to the base metal.

Uniform application of the wear resistant alloy sharply reduces grinding time required. After grinding to finished dimensions, the guide is ready for service.

Mounted in pairs, the completed rollers are repositioned in front of the forming rolls.



FACING AS APPLIED: Proper choice of alloy reduces welding time and gets uniform application.



GRINDING COMPLETES JOB: Hard facing requires only finish grinding and then guides are ready to use.

Camera Shows How Parts Burst at High Speeds

By R. H. Eshelman—Engineering Editor

How does a part fail at 22,000 rpm? When it does, there isn't enough of it left to reconstruct the break.

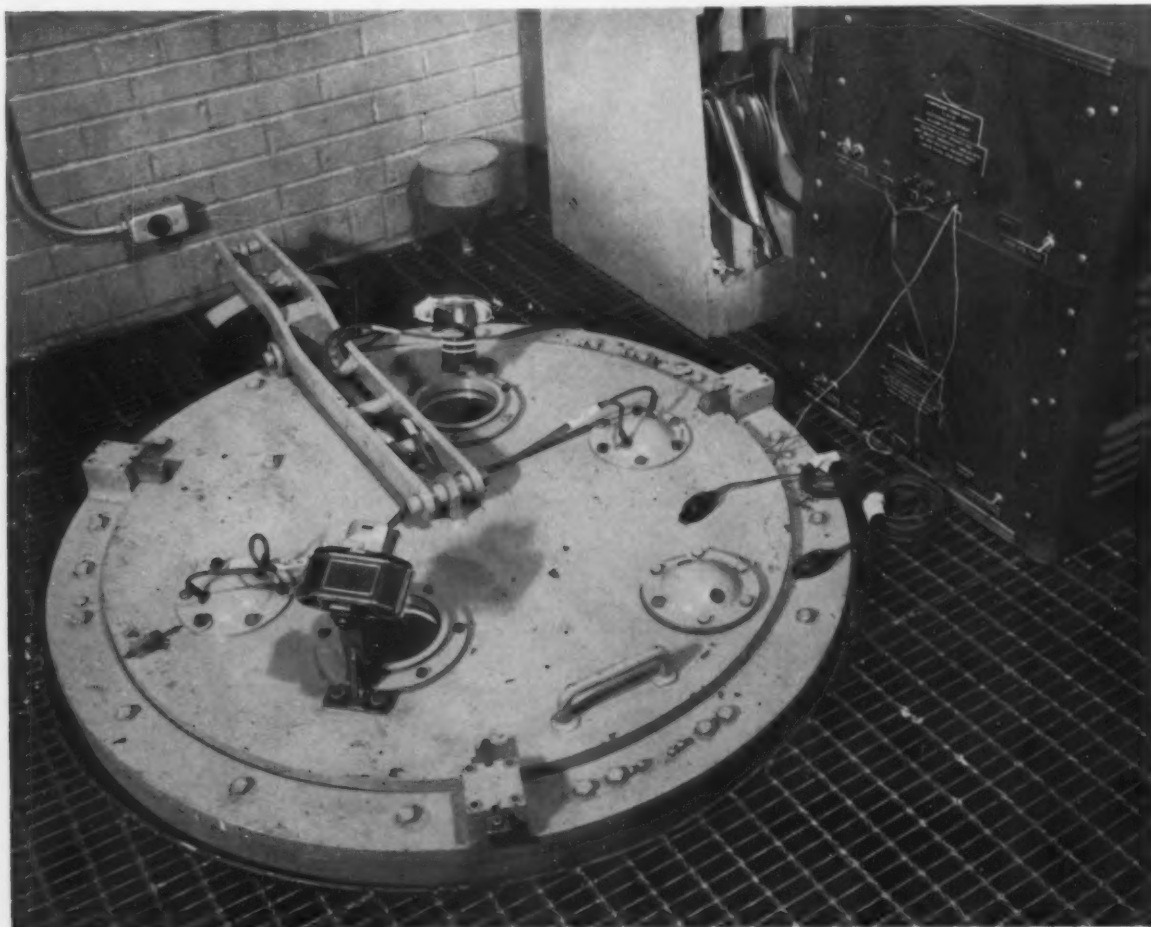
High-speed cameras can see what happens. They provide a permanent record of the brief but violent drama that takes place inside a spin-test pit.

■ You really don't know a new material until you learn how it breaks down under extremes of service. That's the attitude of engineers at Allison Div., General Motors Corp. And where operating speeds, temperatures and material strength are high, it takes some real ingenuity in the testing department to provide the answers.

In one instance, the Parts Test Dept. was handed an experimental

compressor wheel disk made of titanium and asked to test it to destruction. Design engineers wanted to know just how the wheel broke up—where failure started and how it progressed. And they wanted some live data on properties of the titanium part for comparison with production parts.

With jet-engine turbines turning at 12,000 rpm and above, spin testing is considered a necessary in-



READY TO ROLL: Cameras peering through cover of spin pit record exact instant that titanium jet-

engine compressor wheel flies apart. Stroboscopic light is used to expose the fast film.

specification check for every high speed element. In production tests a part is run up to a specified overspeed and held there a minute or so. Instrumentation is simple, usually only a speed indicator. Test speeds are 25 to 30 pct above normal operating rpm, sometimes 50 pct higher.

If the part survives it's considered safe. It may be measured for stretch, but no further study is made of it. Production spin pits are limited in capacity to a few sizes of parts. They're located in the various production plants.

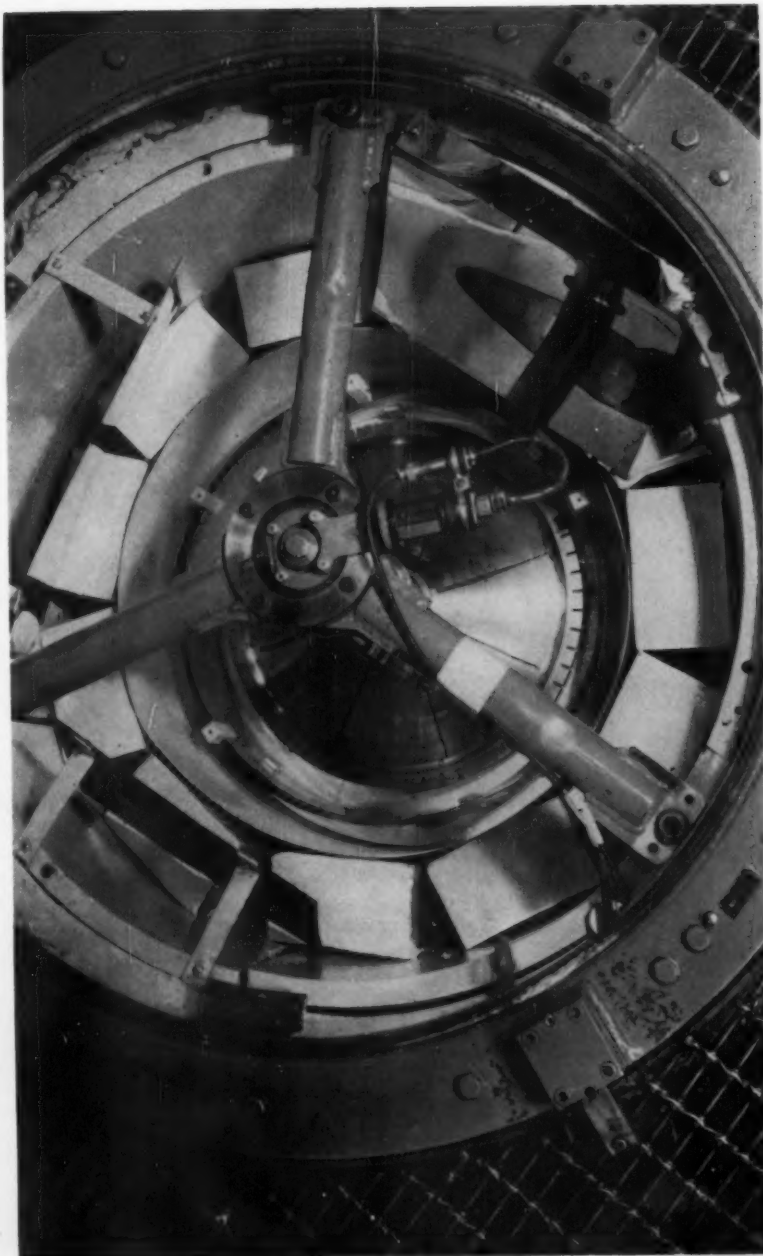
Better Type—Spin pits for experimental test are more flexible, however. They'll take parts up to 6 ft in diam, and they are equipped with more instruments. Test units can provide extremes of temperature. High ambient temperatures are the usual thing, since that's what's encountered in actual operation.

In this particular test Allison engineers not only wanted to find out about titanium—the prime purpose of the test—but also to learn more about how a wheel bursts in overspeed.

Despite various types of pit linings used, exact reconstruction of destructive failures is difficult, sometimes impossible. When test parts burst they fly against the pit walls with such explosive force that they shatter completely. Photography seemed to offer the best means of studying the way parts fail.

In the titanium-burst tests, cameras were set up to record the exact instant of failure. A small 35 mm camera is used for this purpose. Fast film is exposed with a stroboscopic light. Actual flashing time is somewhere between one and two millionths of a second.

Verifies Data—True to design calculations, these tests show that titanium will go to a higher speed than many other alloys. Specifically, the titanium wheel shown in the accompanying photo was running at about 24,000 rpm at time of failure. Bursting started in the center and progressed rapidly to the outside.



INSIDE THE PIT: Titanium wheel positioned for spin test has radial lines painted on its face to aid in studying effect of stresses.

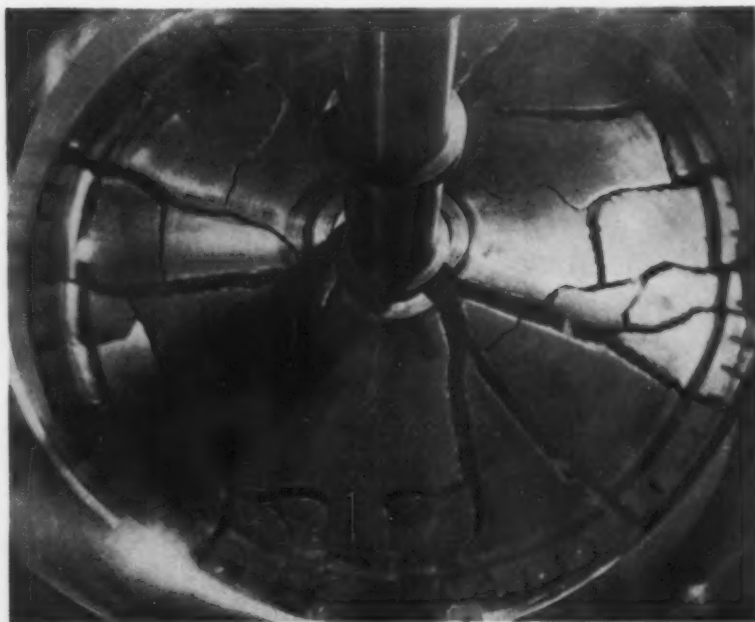
In previous tests, although the wheel ran at the highest speed available in the pit at the time, it did not burst. Therefore, test engineers put three fine saw cuts on the inside of the hub. Examination of the burst wheel later showed that failure began at these points. When notched, the wheel burst at a lower speed than it had been run previously.

Another interesting thing about this test was that photographs showed the wheel breaking down into small pieces, at least 30 in all, before the parts had traveled an inch. Progress of some of the small breaks can be traced.

Actual Service—Following these tests, experimental titanium wheels were put into service and proved



MOMENT OF FAILURE: Titanium wheel disk bursts explosively at speed of 21,800 rpm. Bore of wheel hub was notched in three places.



FURTHER DESTRUCTION: Stroboscopic camera records progress of failure on another titanium wheel tested at an overspeed of 275 pct.

successful. Compared with alloy steels in jet engine compressor wheels, titanium has slightly lower tensile strength. But since it weighs about one-third less, it doesn't develop as much centrifugal stress at the same speed. Thus the presumption that it might operate well at higher speeds.

This method of developing better materials proved especially valuable in early work in this country with jet engines. Early turbine wheels failed at unpredictable speeds, both in spin pits and on test stands. To counter this, more than 200 destruction tests were made in the first year of the development program. From the speed at which parts burst and the manner in which it happened Allison set about to trace the source of failures and determine the reason.

Development wheels first ran at 15,000 rpm, then were considered a success if they survived 17,000 rpm. Improvements in materials eventually raised the minimum to 22,000 rpm.

Proves the Design—Spin testing provides final proof that there have been no gross errors in design and production. But the one type of test alone is no guarantee of soundness of material; the 200 wheels spun to destruction pointed to possible variations in materials as a basic problem.

The cycle for these tests was to bring the wheel up to test speed and hold that speed for five minutes. Many of the wheels burst after running at given speeds for two, four or five minutes; apparently it takes a short while for defects to show up.

At this point other techniques entered the picture. Ultrasonic inspection was especially useful in locating materials defects that proved an important factor in early failures. This type of inspection made it possible to avoid using stock with internal flaws, thus saving production time. Today, however, processing improvements have virtually eliminated this source of trouble.

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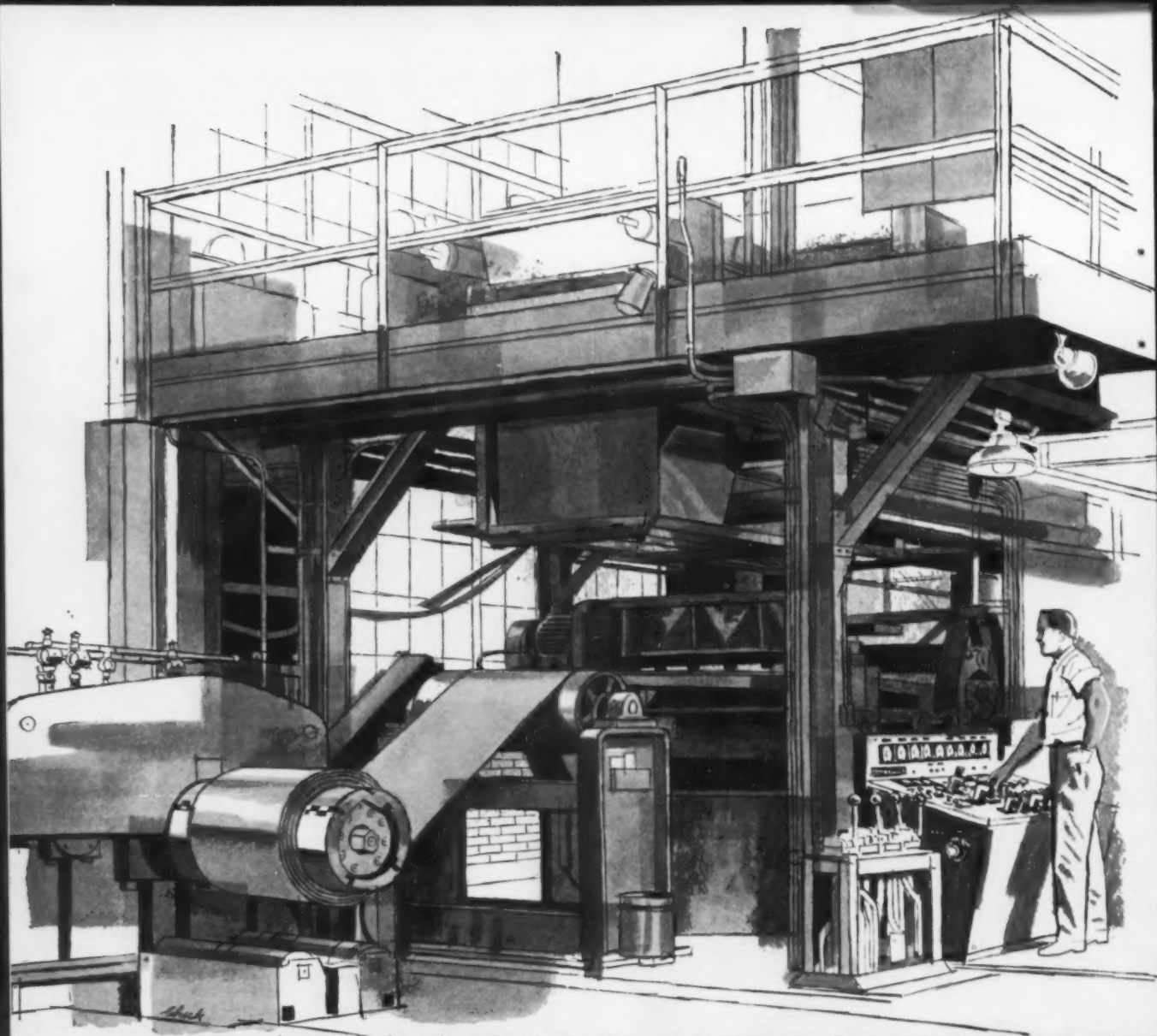
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Fusible Links

A complete line of fusible links for fire doors, windows and other purposes is described in a new folder. (Richards-Wilcox Mfg. Co.)

For free copy circle No. 1 on postcard, p. 127

X-ray Microscope

Scientific details on a commercial X-ray microscope that determines the chemical composition of a specimen are given in a 6-page folder. It explains penetration and selection of opaque specimens on a rotating target holder. (Phillips Electronics, Inc.)

For free copy circle No. 2 on postcard, p. 127

Worm Gear Mountings

A line of standard mountings, including bearings, caps, carriers, and seals for double-enveloping worm gearsets is described. The assemblies described in the 20-page bulletin may be used for standard or custom-designed equipment. (Cone Drive Gears Div.)

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Tape Control System

The advantages and economies of a new tape control system are discussed in a 12-page catalog. Drawings show how control tape is prepared from a numerical drawing,

process sheet and process tape and how the machine control unit uses the information to produce a part. (Bendix Aviation Corp.)

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Phosphate Coating

Two folders describe iron and zinc phosphating compounds. The first is an iron phosphating compound that cleans and coats metal at the same time. The other, a zinc phosphating compound, is designed to give a heavy coating in tank application. (Oakite Products, Inc.)

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Lift Trucks

Listed in 6000, 7000, and 8000 lb capacities, a line of lift trucks is described in a 16-page brochure on the basis of operating performance, maintenance and design. A list of attachments is also included. (Hyster Co.)

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Lifting Tongs

Automatic and motorized tongs for lifting material of any weight, shape, or size are illustrated and briefly described in this loose-leaf catalog. Also included are sheet lifters, rack lifters, motorized rotating hooks, "C" hooks and others. (Heppenstall Co.)

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Thread Rolling

The advantages of rolling threads from the end of the workpiece, with self-opening thread rolling heads,

are given in a newly revised 20-page illustrated catalog. Eight head styles giving capacities from 1/16 to 2 in. are described. (For free copy write on company letterhead to National Acme Co., Cleveland 8, O.)

V Belts for Heavy Duty

A new V-belt made for long center, heavy duty drives is described in a 4-page bulletin. The belt features a proportioned construction reported to eliminate whip and turn-over that leads to failure. Moisture-proof vacuum packaging insures freshness. (Raybestos-Manhattan, Inc.)

For free copy circle No. 8 on postcard, p. 127

Drilling Machine

A vertical gun-type drilling unit meets the demand for an economical machine for producing straight, accurate and smooth holes at production rates in one single operation. (Edlund Machinery Co.)

For free copy circle No. 9 on postcard, p. 127

Dewpoint Control

How to maintain accurate automatic control of dewpoint or carbon potential in endothermic-type atmospheres is discussed in a two-page technical bulletin. (Ipsen Industries, Inc.)

For free copy circle No. 10 on postcard, p. 127

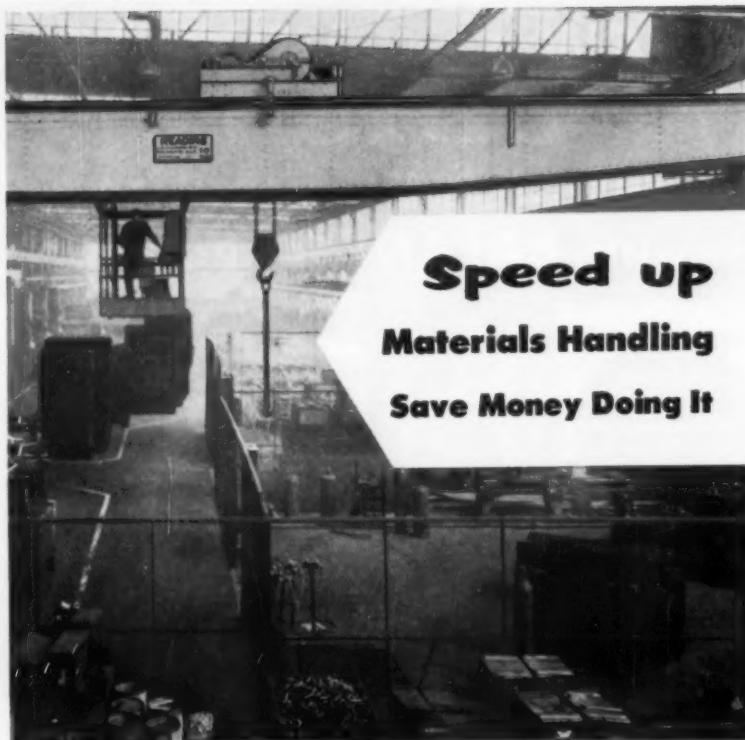
Hydraulic Pull Tools

Three basic hydraulic pull tools for fastener installation are described in an 8-page illustrated catalog. Each unit's operating characteristics are given along with a listing of the fasteners installed by each tool. (Huck Mfg. Co.)

For free copy circle No. 11 on postcard, p. 127

Quality Surfacing

A new 44-page catalog describes a line of precision finishing machines for rotating parts. The units use a patented abrasive process to produce a controlled surface finish



**Speed up
Materials Handling
Save Money Doing It**

Yes, that's a strong promise. But it's being done right now in plants like yours. Here's how:

Match the requirement of your job with a custom-built Reading crane at no extra cost

Imagine, at what you'd normally pay for an "ordinary" crane, you can actually have one "tailor-made" for your own plant. For when you order a **READING CRANE**, our engineers offer you a choice of several interchangeable motor, trolley and hoisting units.

Known as **UNIT CRANE DESIGN**, this unique construction method assures greater operating efficiency. It enables you to move more materials at the lowest possible cost. And it helps you reduce maintenance time and save maintenance dollars—any unit can be removed for overhauling or repair without dismantling any other unit!

READING CRANE & HOIST CORPORATION, 2101 Adams St., Reading, Pa.

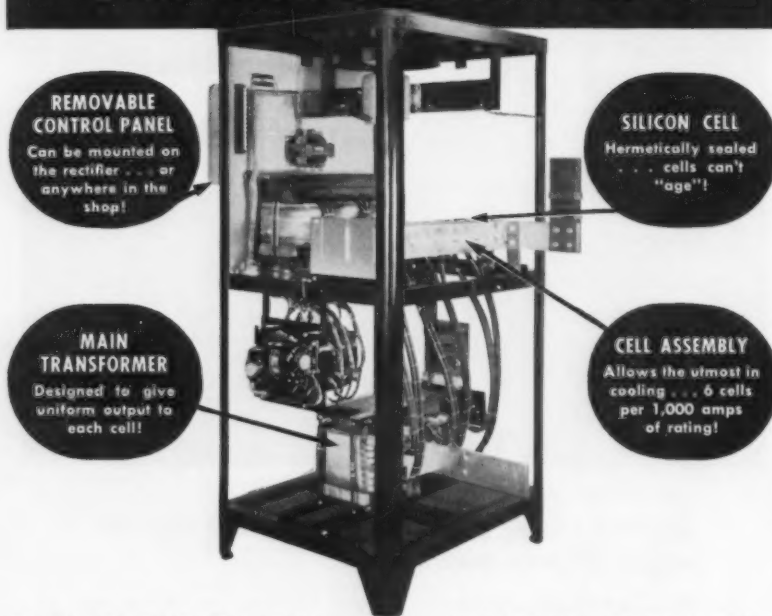
READING CRANES		
CHAIN HOISTS	OVERHEAD TRAVELING CRANES	ELECTRIC HOISTS

NEW from UDYSLITE

UDYSIL

THE SILICON RECTIFIER

with BALANCED POWER



EFFICIENCY . . . FLEXIBILITY THE LONGEST LIFE EVER!

You get all three advantages, and more, with a UDYSIL rectifier! Silicon, the amazing long life element, combined with a new, revolutionary BALANCED circuit, makes the UDYSIL Line the most advanced plating rectifier series ever developed. Only UDYSIL gives you . . .

- ★ **UNLIMITED CELL LIFE**—Hermetically sealed Silicon cells can't "age"—won't ever wear out!
- ★ **UNEQUALED DEPENDABILITY**—New BALANCED circuit power means UDYSIL can't "blow" stacks . . . no more uneven loading of cells!
- ★ **UNAFFECTED BY HIGH TEMPERATURE**—Inducted cooling allows high temperature operation with no loss of cell life, voltage or efficiency!
- ★ **UNIMPEDED APPLICATION**—UDYSIL rectifiers can be used in *any* plating bath. 4.2 ripple factor over the entire voltage range!
- ★ **UNSURPASSED ECONOMY**—UDYSIL offers you economy *two* ways! 92% power factor means lower installation costs . . . exceptionally high efficiency means lower operating costs!

All these exclusive advantages are yours when you select a UDYSIL rectifier.

Available in 1,000, 2,000, 3,000, 4,000, 5,000 and 6,000 ampere ratings with a wide selection of voltages, Udsil rectifiers represent the ultimate in performance, long life and dependability. For the "inside" story on the UDYSIL Line and what it can do for you, contact your local UDYSLITE representative today, or write direct to:



FREE LITERATURE

for less than 1 microinch rms to 60 microinch rms. (Gisholt Machine Co.)

For free copy circle No. 12 on postcard, p. 127

Plastic Pipe, Fittings

Rigid unplasticized polyvinyl-chloride pipe and fittings are covered in a new bulletin. (Mannesmann-Easton Plastic Products Co., Inc.)

For free copy circle No. 13 on postcard, p. 127

Program Timer

An electronic program timer controls sequence and timing of several related operations of a machine or process. A description sheet gives specifications and operating data. (Electronic Processes Corp. of Calif.)

For free copy circle No. 14 on postcard, p. 127

Welding Chart

As a service to welders, a maintenance chart covers all welding machines regardless of manufacture. Trouble-shooting tables include trouble, cause and remedy columns. (A. O. Smith Corp.)

For free copy circle No. 15 on postcard, p. 127

Pyrometers

A new bulletin describes a line of optical, radiation, immersion, surface and indicating pyrometers. (The Pyrometer Instrument Co.)

For free copy circle No. 16 on postcard, p. 127

Roller Pipe Cutters

A revised bulletin covers three sizes of roller pipe cutters. The booklet lists design features and specifications. (Landis Machine Co.)

For free copy circle No. 17 on postcard, p. 127

Tungsten Carbides

A 24-page folder shows the processing from start to finish of tungsten carbide parts by both the hot and cold press method. (Metal Carbides Corp.)

For free copy circle No. 18 on postcard, p. 127

For Years of
Repeat Performance

specify
SANDVIK
SPRING STEEL

Sandvik Steels have a record of success in applications which demand years of consistent, continuous performance.

In products such as clock and watch springs, compressor valves, piston ring springs, vibrator reeds . . . wherever fatigue life is *vital*, you'll find Sandvik untiring in service.

If your product requires high fatigue life, fine surface finish, uniform physical properties and accurate gauge, try Sandvik.

You can get Sandvik strip steels:

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- ▶ In straight carbon and alloy grades.
- ▶ Annealed, unannealed or hardened and tempered.
- ▶ Polished bright, yellow or blue.
- ▶ With square, round or dressed edges.
- ▶ Wide range of sizes in stock—also slitting facilities available.

Ask your nearest Sandvik office for further information or technical assistance.

SANDVIK SWEDISH SPECIALTY STRIP STEELS

are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical, etc. • Razor Blades • Shock Absorbers • A Wide Variety of Springs • Trowels • Reeds: Vibrator, Textile, etc., • Piston Ring Segment and Expanders • and many other applications.

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SS-105



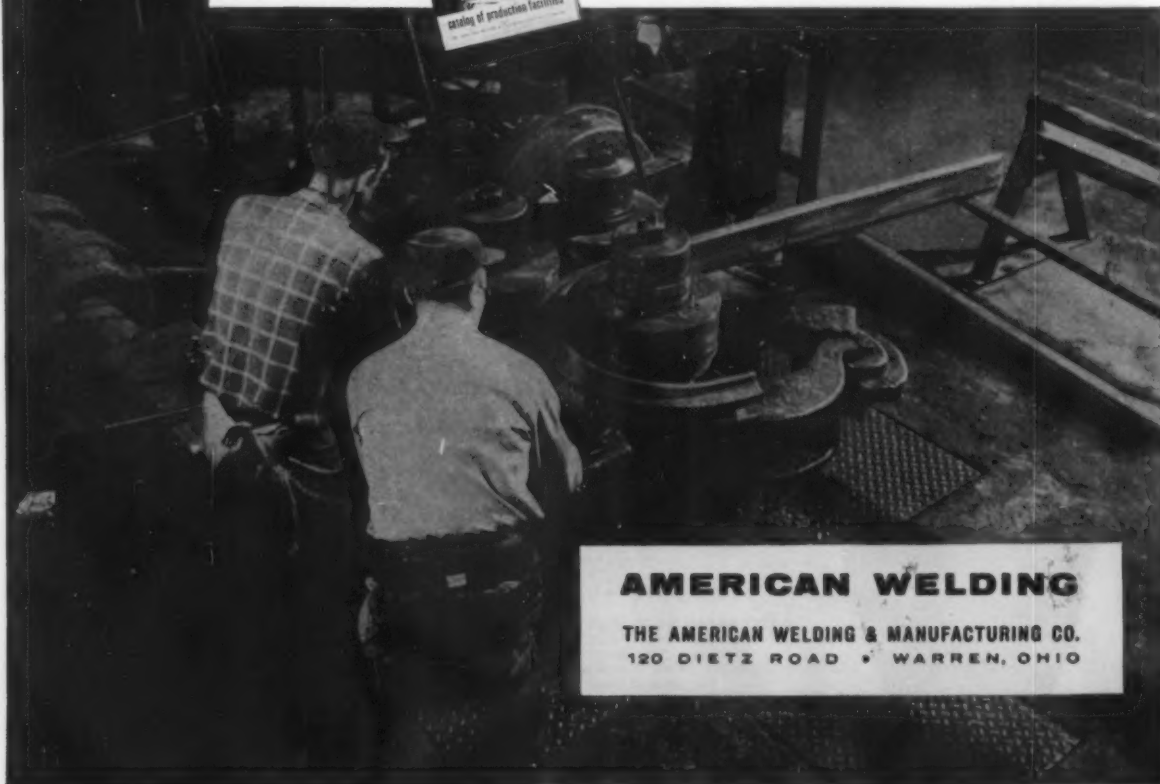
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to Make this 268 lb.
Stainless Steel Ring**

By using extruded or mill-rolled shapes and flash butt-welding, American Welding can frequently help customers slash production costs of their circular products over other methods of manufacture. Savings in expensive metals are substantial, plus sizable reduction in machining time. And where some of the more difficult metals to weld — such as titanium, aluminum, zirconium, stainless and heat-resistant alloys — are required, American Welding has the special knowledge and equipment to do those difficult jobs to your specifications.

The use of flash butt-welded rings, bands, and assemblies has saved millions of dollars for jet engine manufacturers . . . why not investigate what economies it can mean to you. If it's circular and of metal — call American Welding first!



NEW PRODUCTS CATALOG AVAILABLE. Write today for 20-page catalog illustrating the many types of circular products American Welding can form, weld and machine for you.



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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Magnetic Drives

Designed to protect all kinds of equipment from the dangers of sudden, shock-loaded starts and stops, a new magnetic drive is featured in an eight-page technical bulletin. Driving and driven rotors are never in contact. A controlled torque is induced in the magnetic rotor through eddy currents. (Whitney Chain Co.)

For free copy circle No. 19 on postcard

Precision Production

If it's a problem part, an 18-page pamphlet will give you some leads on what one company can do in the way of precision work at mass production rates. (Parish Pressed Steel Div., Dana Corp.)

For free copy circle No. 20 on postcard

Enclosed Motors

A new line of totally-enclosed direct-current motors features self-contained heat exchanger cooling for operation in contaminated atmospheres. A folder describes ratings and applications. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 21 on postcard

Hydraulic Cylinders

A new line of 2000-psi double-acting hydraulic cylinders is the subject of a bulletin that covers design features. (The Oilgear Co.)

For free copy circle No. 22 on postcard

Aluminum Sheet

The subject of Aluminum sheet and plate is covered in a 320-page, illustrated book. The book describes

aluminum and its alloys, how it's made, its availability and properties. It gives the reader basic facts to help select and use aluminum for various methods of fabrication and finishing. (For free copy write on company letterhead to Technical Editor, Kaiser Aluminum & Chemical Sales, Inc., Chicago 11, Ill.)

Fiber Glass Tanks

Non-corrosive industrial plating tanks of fiber glass are illustrated in a new brochure. Reinforced and resin-bonded, the surfaces of the tanks are highly acid-resistant and non-conductive. (L. A. Darling Co.)

For free copy circle No. 23 on postcard

Milling Spindles

Hydraulically driven milling spindles feature constant horsepower over a variable speed range. The design permits use in new machine tools or in converting machines to tracer controlled operation. Standard models up to 50 hp and larger specials are covered in a 12-page catalog. (Romulus Tool & Engineering Co.)

For free copy circle No. 24 on postcard

Power Rectifiers

An illustrated 32-page guide covers metallic power rectifiers with germanium, silicon and selenium semiconductors. Operation data gives characteristics of components used. (For free copy write on company letterhead to Sel-Rex Corp., Nutley, N. J.)

Wire-Cloth Slide Rule

Design and production calculations are simplified for processors of metal wire cloth by a multi-scale slide rule. It gives direct readings of percent open area of any wire cloth from 1 to 100 meshes per in. (Reynolds Wire Div., National Standard Co.)

For free copy circle No. 25 on postcard

Metal Cutting Tools

High-speed steel and carbide tools are catalogued in a 60-page

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 4/17/58

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31	32	33	34	35	36	37	38	39	40
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FREE LITERATURE

publication. (For free copy write on company letterhead to Ed. Castor Associates, Wyandotte, Mich.)

Diamond Wheels

Data on diamond wheels and grinding techniques is presented in a 32-page catalog. (For free copy write Clipper Diamond Tools Co., New York 14, N. Y.)

Sandblast Machines

For cleaning, deburring, surfacing, stenciling and matte finishing on metal, glass and plastics, a cabinet-type sandblast machine is the subject of a new four-page bulletin. (Leiman Bros., Inc.)

For free copy circle No. 26 on postcard

Sliding Gate Valves

A line of gate pressure-reducing valves is designed to give dead end shut-off on all fluid services. A new six-page bulletin contains flow capacity charts, dimensions and material specifications. (Jordan Industrial Sales, Div. of OPW Corp.)

For free copy circle No. 27 on postcard

Cam Making Machines

Cam milling and grinding machines, together with attachments, are described in an illustrated four-page catalog. The units turn out box, barrel, side and index cams. (Rowbottom Machine Co.)

For free copy circle No. 28 on postcard

Self-Aligning Coupling

A low-priced, all steel, gear-type coupling is the subject of a new brochure. The self-aligning unit is produced for shaft sizes up to 3 1/4 in. (Koppers Co., Inc.)

For free copy circle No. 29 on postcard

Pneumatic Pull Tools

A reference table in a new six-page catalog provides quick determination of the fasteners that can

be installed with each of a line of pneumatic tools. (Huck Mfg. Co.)

For free copy circle No. 30 on postcard

Control Vibration

It's the high resiliency and structural strength of cork that effectively cushions vibration, noise and shock for massive, difficult to isolate machinery. A catalog describes the granular structure of the material in explaining how it works. (The Korfund Co., Inc.)

For free copy circle No. 31 on postcard

Motor Service

Direct-current motor problems are solved by wide experience, fast service and follow through engineering. This service is outlined in an eight-page booklet covering both industrial and military applications. (General Electric Co.)

For free copy circle No. 32 on postcard

Grooved-End Tubing

It makes possible a piping system that can be set up and broken down in a matter of minutes. The portable mechanical coupling feature of the mill-grooved light-weight steel tubing is described in an eight-page bulletin. (Republic Steel Corp.)

For free copy circle No. 33 on postcard

Phenolic Products

A line of phenolic resins, varnishes and molding powders is the subject of a new booklet. It's a useful reference for specifying proper phenolic materials for many applications. (General Electric Co.)

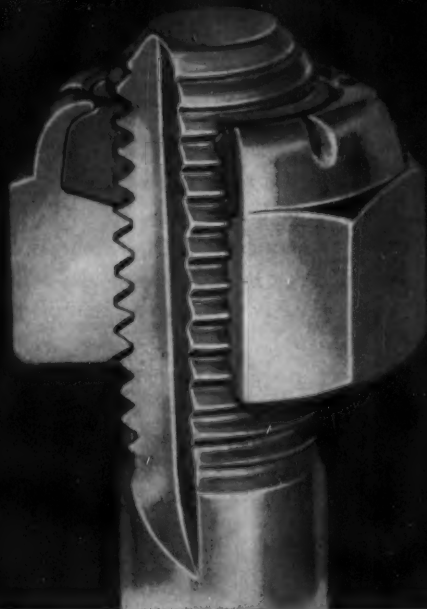
For free copy circle No. 34 on postcard


Lighted Switches

The designer of pushbutton panels will find a wide selection of switches, lamps and buttons in a new eight-page data sheet. A circuit diagram shows how magnetically held switches can operate in a one-by-one sequence with no mechanical release systems. (Micro Switch, Div. of Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 35 on postcard

The nylon collared Elastic Stop[®] nut never damages bolt threads!



The nylon locking insert * will not seize threads, gall or remove plating

The red nylon locking collar is an integral part of an Elastic Stop nut. Undersize in diameter in relation to standard bolt tolerances, this insert grips the entering bolt threads with strong, smooth nylon fingers that dampen impact loads and resist turning under the most severe conditions of vibration or shock. The perfect fit between bolt threads and the locking collar also serves to seal off internal bolt and nut threads and to protect them against corrosion. Furthermore the nylon insert is impervious to gasolines, oils, salt atmospheres, cleaning compounds and common acids. The remarkable wear resistance of nylon plus its elastic recovery makes Elastic Stop nuts reusable through more than a hundred on and off cycles.

Because an Elastic Stop nut is a one-piece unit it is less expensive to install than castellated nuts and cotter pins, or double nuts. Equally important, it is a *stop* nut that *locks at any position on the bolt* without requiring secondary "safety" devices; it is simple to adjust precisely—it is easily wrenched off or readjusted. Elastic Stop nuts have been used by American industry since 1930 to solve the toughest applications on railroad, automotive, earth moving and farm equipment, as well as on all types of electrical machinery.

Elastic Stop nuts are available in sizes ranging from a watchmaker's 0-80 through 3", and in many standard finishes and materials including carbon and stainless steels, brass, duronze and aluminum.

ELASTIC STOP NUT CORPORATION OF AMERICA



also maker of the



*The Red Locking Collar is a
Registered Trademark of ESNA

Elastic Stop Nut Corporation of America
Dept. N27-477, 2330 Vauxhall Road, Union, N. J.

Please send me the following free fastening information:

- ☐ ELASTIC STOP nut bulletin ☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____



SUPERVISORY CONTROL

New remote operation economy regardless of control distance for:

- power distribution
- motors
- valves
- pumps
- industrial water systems
- any piece of electrical apparatus which has provisions for local control

FREE BULLETIN!



SECTION B513-8
GENERAL ELECTRIC CO.
SCHENECTADY 5, N. Y.

I'd like full details on the application of General Electric Supervisory Control Equipment.

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Progress Is Our Most Important Product

GENERAL ELECTRIC

TECHNICAL BRIEFS

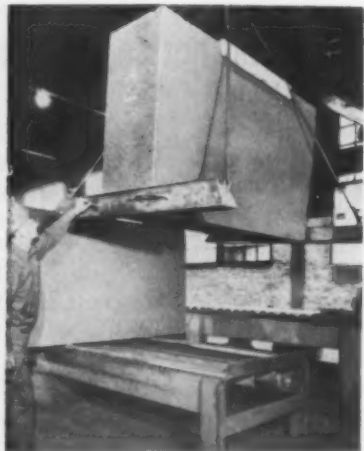
Graphite Blocks Aid Honeycomb Brazing

When it comes to precision in aircraft honeycomb panels, it takes special bracing to prevent warping during brazing.

One company finds graphite blocks have the best properties for the job.

■ Six huge blocks of high-grade graphite are now being machined into intricate shapes by an aircraft company. The blocks will perform a vital function in brazing of honeycomb panels.

Originally shipped from National Carbon Co., New York, each block



Even at high temperatures graphite holds dimensions.

weighs 2½ tons. Measuring 20 x 46½ x 84 in., the big slabs are now being worked by Convair Div., General Dynamics Corp. After accurate machining, they will serve brazing operations in producing components for B-58 bombers.

Go Into Furnace—The aircraft maker will place stainless steel com-

ponents on the graphite shapes; riding on the graphite, the stainless items will be furnace-brazed together at high temperatures to form honeycomb panels.

Convair and its subcontractors found graphite the only acceptable material for such applications. It shows dimensional stability at elevated temperatures; it resists thermal shock, too.

Hardfacing:

Flame plating increases aluminum pulley life

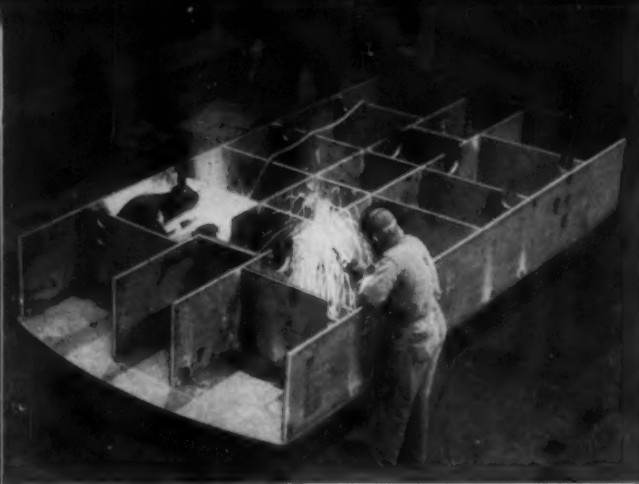
Aluminum pulleys which offer corrosion resistance and low inertia in wire drawing equipment also wear rapidly. One company finds that flame plating increases pulley life without losing lightweight advantages.

Pulley life at Whitaker Cable Co., North Kansas City, Mo., once averaged only ten days. Flame plating with a Linde Company process jumps this life to ten months.

Blasts Carbide On—Using a special gun, the firm "blasts" tungsten carbide onto the pulley surface. Particles of tungsten carbide feed into the gun chamber and are suspended in a gas mixture. Igniting the gas drives the particles through

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 127. Just indicate the page on which it appears. Be sure to note exactly the information wanted.



Welding underside of car. Steel plate of all-welded car is $\frac{3}{4}$ " to $1\frac{1}{4}$ " thick. Side plates and deck are 1" steel; end plates are $1\frac{1}{4}$ ".



Checking thickness of steel underframe. Longitudinal members are 1" plate and the spacers are $\frac{3}{4}$ " plate.

Charging Box Cars ... built to last by steelmakers who "treat 'em rough"



Completed charging box car has 25-ton capacity. It is 7' 4" wide x 15' 7" long, on an 84" wheelbase.

Nowhere else do industrial cars take more punishment than in our own United States Steel plants. And, in the 36 years we have been making industrial cars for our own use, United States Steel has acquired vast experience from which to design and build all kinds of industrial cars that will more than meet our customers' service requirements.

A good example of USS-Designed Industrial Cars is the four-unit Charging Box Car shown above. It is an all-welded, rolled steel plate car with heavy-duty running gear—equipped with anti-friction outboard bear-

ings—and rugged underframing. Designed for operation on standard gage track, this car weighs 20,300 pounds, unladen, and will easily carry 25 tons.

Capacity, running gear, and other design features can be modified to meet your specific needs. In short, every USS Industrial Car is "tailor made."

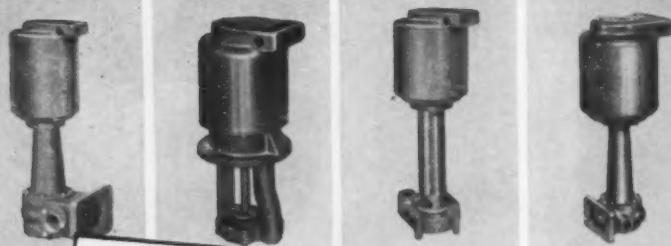
Our Engineers will be pleased to call at your convenience to discuss your requirements for industrial cars. Meanwhile, send for a free copy of our 32-page illustrated booklet—"USS Custom Designed Cars."

USS is a registered trademark

United States Steel Corporation - Pittsburgh
Columbia-Geneya Steel - San Francisco
Tennessee Coal & Iron - Fairfield, Alabama
United States Steel Export Company



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There's a
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 COOLANT PUMP
 TO FIT EVERY
 REQUIREMENT

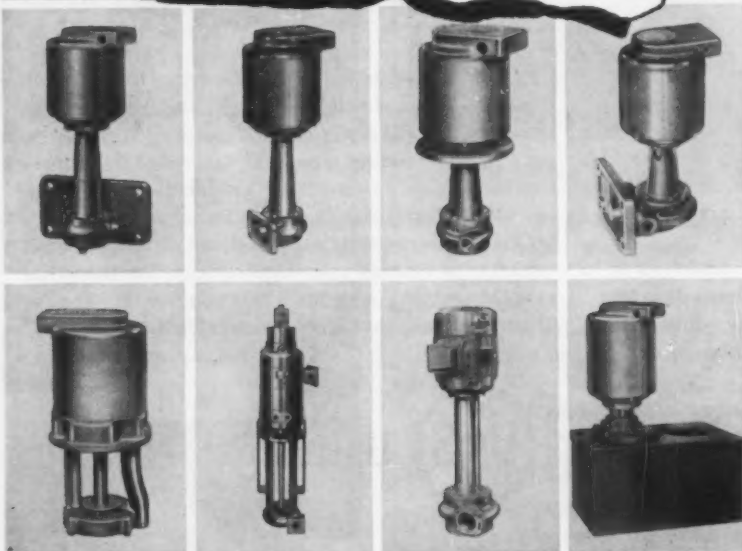
Inside, outside, flange mounted, immersed type, pipe connected, and tank units . . . you name it . . . we have it. Choose the make and model GUSHER PUMP that best fits your application. . . and remember, GUSHER Sealless PUMPS are of advanced design, precision built and electronically balanced. You get long life . . . efficient operation. Write for catalog today.

Also available our Rumaco line of self adjusting seal pumps for installations requiring a seal and GUSHER Molten Metal Pumps.

THE Ruthman MACHINERY CO.

• COOLANT PUMPS
 • CIRCULATORS • AGITATORS
 • MOLTEN METAL PUMPS

1809-1823 READING ROAD, CINCINNATI 2, OHIO



TECHNICAL BRIEFS

the barrel, heats them to plasticity, and hurls them against the pulley.

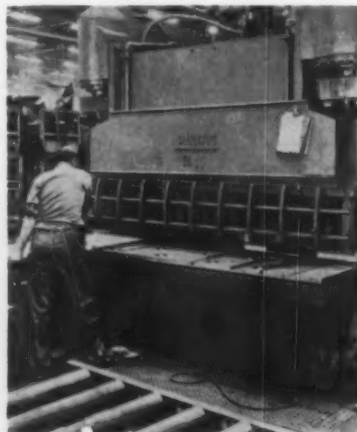
Particles embed themselves into the workpiece surface where a microscopic welding action bonds them in place. Added passes build up the material to the desired thickness (0.002 to 0.010-in.).

While temperatures in the gun barrel reach 6000°F, the work seldom heats up to over 400°F.

Fabrication:

Large Hydraulic Shear Cuts Plate and Costs

An 8-ft hydraulic shear representing an investment of less than \$1 per hour pays for itself out of sav-



Shear cuts plate up to 1½ in. in low-cost operation.

ings in 36 months at Caterpillar Tractor Co., Decatur, Ill., plant. It cuts materials up to 1½-in. thick from flat bar stock and plates to finished lengths and trims angles.

All heavy shearing at Caterpillar Decatur plant is done on hydraulic shears. The shears are manufactured by Pacific Industrial Mfg. Co., Oakland, Calif.

Powder Metals:

Monthly listings of abstracts covering German patent applications and patents granted in powder metallurgy are now available. Technical Review Services, Lakeland, O., offers them to interested firms.



Packing Cost: **3 cents per ton**

One steel strap packages this ten-ton steel coil. The strap is regularly applied in about thirty-six seconds. A Signode Model PN air power stretcher pulls the strap to 1600-pound tension every time; a Signode Model RCN 114 air power sealer applies the seal. There's no waste strap, and the cost of the strap and the seal together is only about 27 cents. The strength and low

cost of the steel strapping itself, plus the speed and simplicity of application, rule out any other way of doing the job.

Find out how Signode strapping, tools, and skilled helpfulness with methods can make your product cost less to handle, store, ship and receive. There's no obligation...just call the Signode man near you, or write:



First in steel strapping

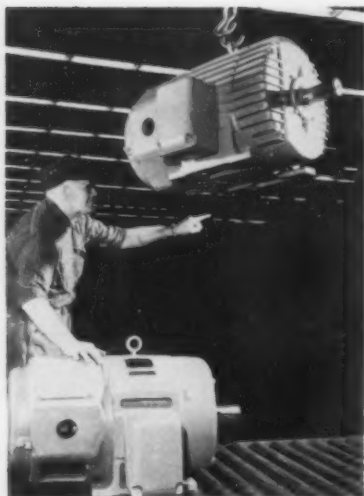
SIGNODE STEEL STRAPPING CO.

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New Production Ideas

Equipment, Methods and Services

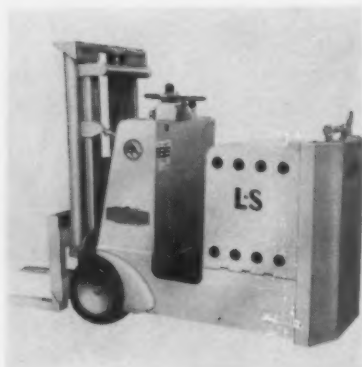


New Design Cuts Motor Size and Weight

Size reduction up to 59 pct and weight savings to 49 pct over previous models are the feature of two types of wound-rotor motors. They're available from 5 through 150 hp. The first type, having intermittent rating for crane and hoist operation comes either totally enclosed or with drip-proof enclosures. It's best suited for variable speed and high starting torque. It can be converted in the field from drip-proof to totally enclosed non-ventilated by adding hand-hole covers and changing pulley-end

shields. This conversion is possible on sizes from 7½ to 30 hp. The other type is rated for constant or adjustable speed and is available in open drip-proof enclosures for application to pumps, compressors and fans. Moisture protection is provided with glass-insulated wire, impregnated glass roving and a thermosetting varnish applied before the final dip and bake. The collector straps are insulated to reduce shorting from dirt accumulation. The collector assembly is keyed to the shaft. (General Electric Co.)

For more data circle No. 40 on postcard, p. 127



Electric Lift Truck Has Two Capacities

Adding a counterweight to this lift truck doubles its capacity. While the standard capacity is 2000 lb at a 48-in. load length, the counterweight immediately raises the capacity to 4000 lb at the same load length. A stand for the counterweight makes the change a 2 minute operation involving only two bolts. To remove the counterweight, the operator backs the truck against the

stand. He loosens two bolts and the counterweight drops into the stand where it is held in place by a chain. Replacing it on the rear of the truck is just as simple. As a 2000 lb truck it can operate on low-capacity floors or in a truck body. When a 4000-lb lift is required, addition of the counterweight does the trick. (Lewis-Shepard Products, Inc.)

For more data circle No. 41 on postcard, p. 127



Inert Gas-shielded Arc Welder Is Portable

A new portable welding unit brings manual operation to the inert gas-shielded method. To cover a wide range of wire sizes from 0.020 in. hard to ⅜ in. aluminum, both push and pull guns are available for feeding consumable electrode. A trigger on the gun controls not only the wire feed, but also the inert shielding gas (argon or helium). The

gas envelops the weld area to prevent atmospheric contamination. The complete system comprises a gun with fittings, a wire feeder, control panel, and the necessary hoses and cables to carry cooling water and shielding gas. The process will join titanium and zirconium. (Air Reduction Sales Co.)

For more data circle No. 42 on postcard, p. 127



LEADERSHIP at work

California Press . . . first to buy the finest! The first TF Series mill delivered in the San Francisco area is working productive wonders at California Press Manufacturing Co., San Francisco. The Kearney & Trecker—Milwaukee Model 415 TF is shown here with operator Paul Cordova. Triple accuracy is assured by the extra rigidity of twin-screw support—exclusive on all TF Series mills.

6792 W. NATIONAL AVE., MILWAUKEE 14, WIS.



Kearney & Trecker's man on the job . . .

Frank Helderle of Moore Machinery Co., Berkeley—worked with California Press in their selection of the finest mill. For expert milling counsel, call the K&T man near you. And remember to ask him, or write direct, for free comprehensive catalog.

Kearney & Trecker staff photo by Ron Johnson



Versatile salt bath furnace has extra pot...will travel

Versatility and portability are the chief advantages of this immersed electrode Hevi-Duty salt bath furnace at Clevite Research Center in Cleveland. Since work here is experimental, the furnace must be used on a wide variety of operations. It is equipped with a welded steel pot for low-temperature heat treating and an interchangeable ceramic pot for temperatures up to 2300° F.

The furnace is coupled with a transformer and mounted on rollers so that it may be used anywhere in the shop.

Perhaps this combination of adaptability and portability can fit into your operation — and save you the cost of two or more specialized furnaces.

Write for Bulletin 655 for further information about Hevi-Duty salt bath furnaces, or outline your particular problem.

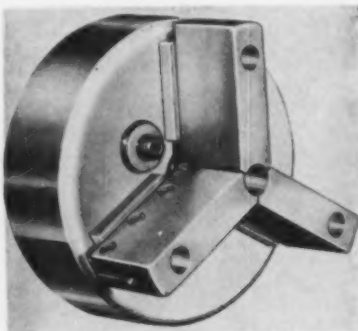
- Heat Processing Furnaces
- Dry Type Transformers
- Constant Current Regulators



NEW EQUIPMENT

Diaphragm Chuck

A new diaphragm chuck accommodates high speed precision boring or grinding jobs with single and multiple spindles. It handles parts from 1/8 to 3-in. diam. Small and compact, this air operated chuck gives controlled concentricity at spindle speeds up to 5000 rpm.



The chuck is a stock item with three adjustable jaws and fixed stops. A flange adapter for face plate applications is furnished. (N. A. Woodworth Co.)

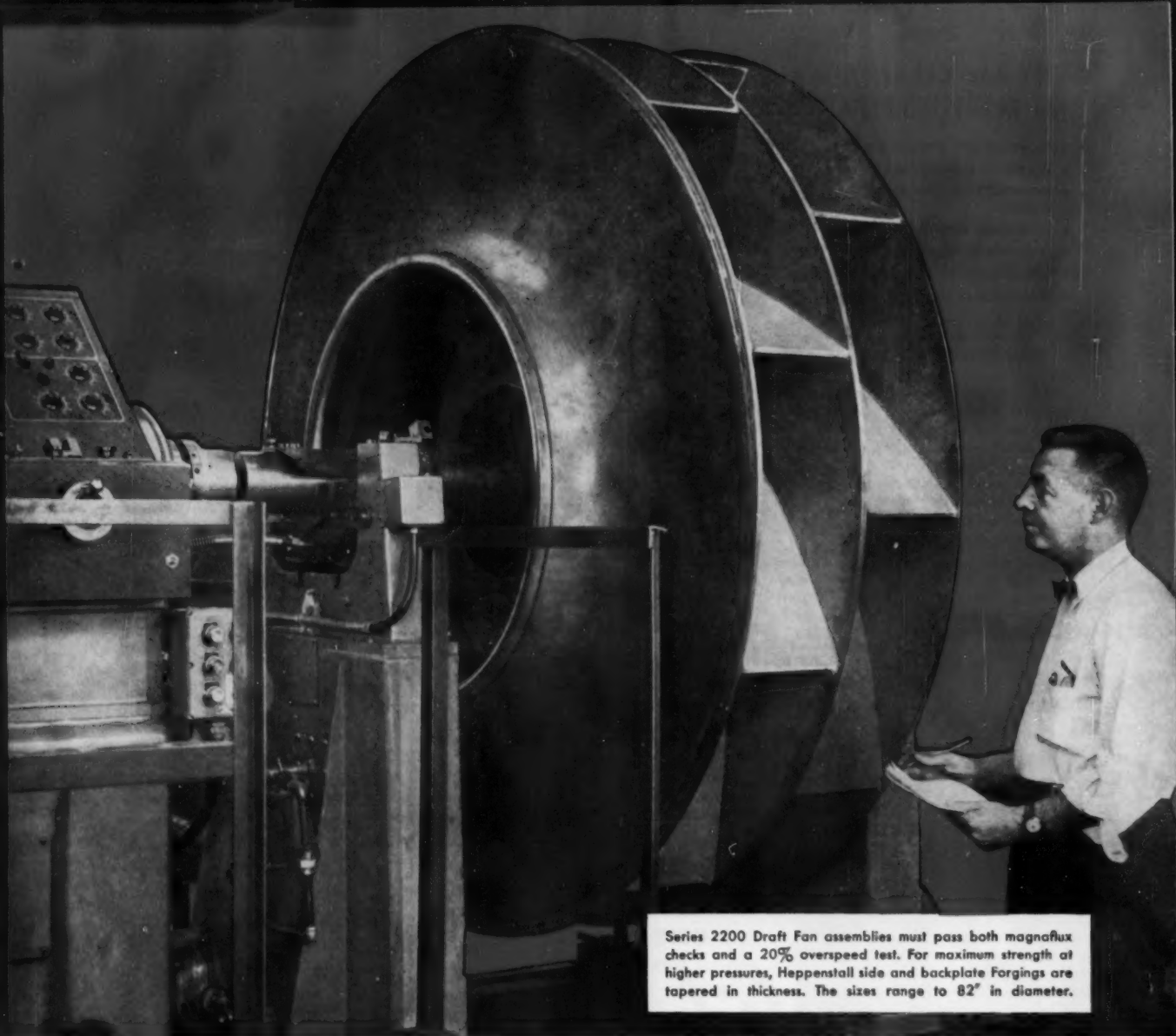
For more data circle No. 43 on postcard, p. 127

Furnace

Semi-conductor manufacturers may find this single crystal growing furnace interesting. Suitable for bench mounting, it produces crystals



up to 12-in. long. A controllable 15-kw saturable core reactor gives melt temperatures up to 1550°C. The fused quartz crucible has a 9 cu in. capacity. Pulling length of 12-in. through a variable speed mechanism gives the opera-



Series 2200 Draft Fan assemblies must pass both magnaflux checks and a 20% overspeed test. For maximum strength at higher pressures, Heppenstall side and backplate Forgings are tapered in thickness. The sizes range to 82" in diameter.

To be sure...

Westinghouse uses Heppenstall Forgings for its Series 2200 Mechanical Draft Fans

"We use Heppenstall Forgings for our Series 2200 . . . the forgings machine well and stand up under the various processes that we subject them to in preparing them to our specifications. When you combine quality with reliability . . . it answers our desires." So says Mr. J. E. McDonald, Manager of Engineering, Westinghouse Electric Corporation, Sturtevant Division, Hyde Park, Massachusetts.

In the series 2200, Heppenstall Forgings are used for the side plate, center plate with hub, back plate and fan shaft. This is the first fan ever to provide the advantages of "airfoil" blading to single stage blowers in

a range of pressures from 45" to 90" of water, at motor speeds of 1800 RPM.

Heppenstall Forgings, in any shape you may require, are made from special Heppenstall open hearth carbon and alloy steels, or high alloy and heat resisting stainless steels from Heppenstall Electric Induction Furnaces. Before shipment, each forging passes rigid inspection and ultrasonic testing. This assures you a trouble-free component of your product.

Find out how Heppenstall Forgings can build extra quality and performance into your equipment. Ask your Heppenstall Company Representative.



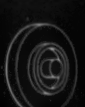
DIE BLOCKS



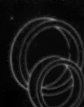
MATERIALS HANDLING
EQUIPMENT



KNIVES



FORGINGS



RINGS



BACK-UP
ROLL SLEEVES



HEPPENSTALL COMPANY

PITTSBURGH 1, PENNSYLVANIA

PLANTS: Pittsburgh, Pennsylvania • Bridgeport, Connecticut
Indianapolis, Indiana • New Brighton, Pennsylvania

MIDVALE-HEPPENSTALL COMPANY

Nicetown, Philadelphia 40, Pa.

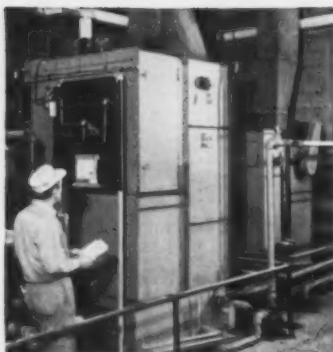
DRY and CLEAN AIR at the RIGHT TEMPERATURE

- to control your product quality
- to protect a critical operation
- to protect apparatus from moisture damage
- to DRY your material or product
- to control packing or storage conditions
- to assure precision in testing or research
- to increase air conditioning capacity

Air Condition by the NIAGARA Method
Using HYGROL Liquid Absorbent

This compact method, giving high capacity in small space, removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the air.

Most effective because... it removes moisture as a separate function from cooling or heating and so gives a precise result, and always. Niagara machines using liquid contact means of



drying air have given over 20 years of service. The apparatus is simple, parts are accessible, controls are trustworthy.

Most reliable because... the absorbent is continuously re-concentrated automatically. No moisture-sensitive instruments are required to control your conditions... no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

Most flexible because... you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Write for Bulletins 112 and 131 and complete information on your air conditioning problem.

NIAGARA BLOWER COMPANY

Dept. IA-4, 405 Lexington Ave., New York 17, N. Y.

Niagara District Engineers in Principal Cities of U. S. and Canada



Handling Coil Stock?

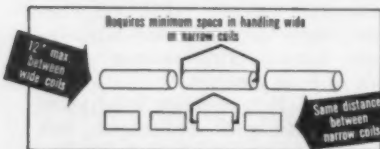
CHECK THESE

C-F LIFTER ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles — saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw

openings permit handling a very wide range of coil widths... carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles — a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.



CULLEN-FRIESTEDT CO.

1303 South Kilbourn Avenue • Chicago 23, Illinois

NEW EQUIPMENT

tor wide product control. Interchangeable heads allow inert gas or vacuum operation. (NRC Equipment Corp.)

For more data circle No. 44 on postcard, p. 127

Thickness Gage

Measuring pipe wall thickness can easily be done with a recently announced portable transistorized gage. The unit nondestructively



measures wall thickness on 2 to 8-in. pipe sizes. Nonferrous or plastic pipe walls are measured throughout a range of zero to 1-in. thick. To operate, the inspector places the detector on the pipe, presses a button and reads the meter directly. (Industrial Nucleonics Corp.)

For more data circle No. 45 on postcard, p. 127

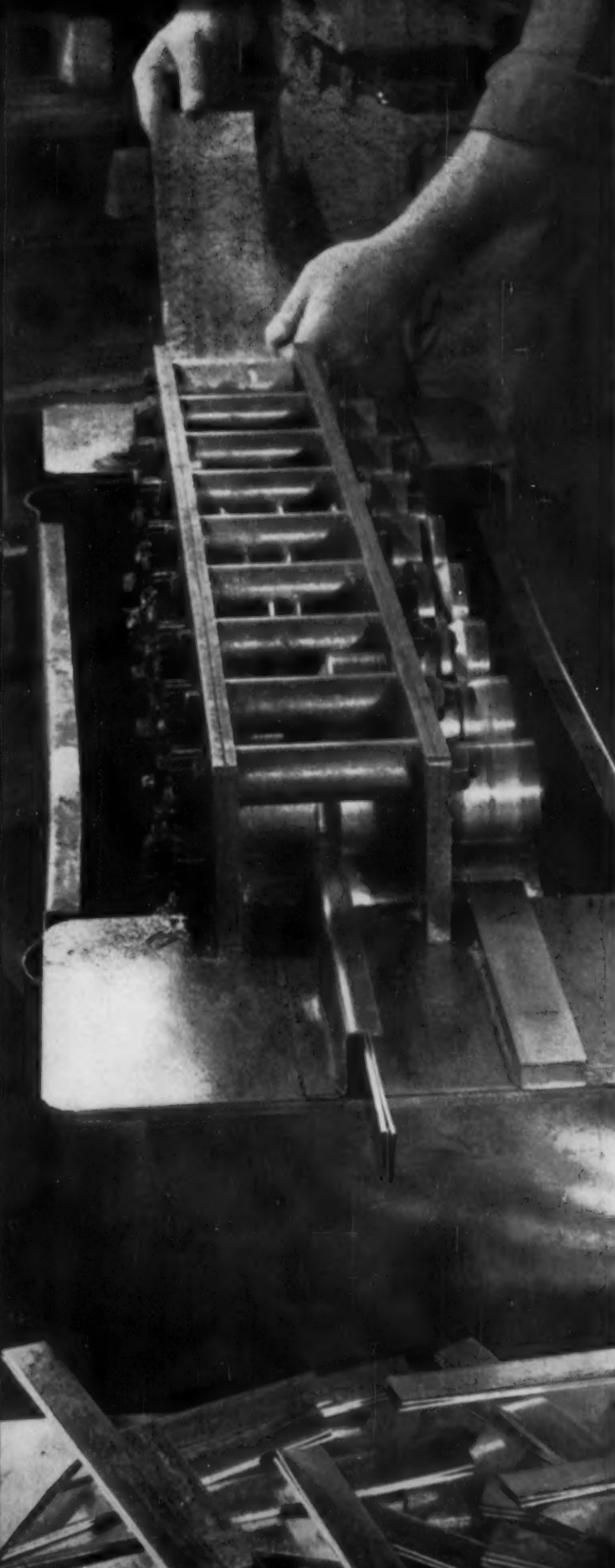
Expansion Bolt

Requiring only one size hole, this expansion bolt has no sleeves, shields, or other parts to lose. It's only necessary to place the piece to be fastened in position, drill a hole through it into the structure, insert the bolt and tighten. This anchors the piece firmly. Bolt sizes range from 1/4 to 1 3/8 in. diam and 1 1/2 to 3 in. long. Weight capacity runs from 200 to 1000 lb. (Kirel, Inc.)

For more data circle No. 46 on postcard, p. 127

Ball Valves

Polyvinyl chloride ball valves recently developed are self lubricating. Lightweight and compact, the valves' easy takeup compensates for wear. These quick opening valves have no metal parts, elimi-



"Short radii bends?"

WEIRKOTE'S®

zinc coating

thrives on 'em!"

Weirkote's ability to take punishment is a big reason so many manufacturers are so enthusiastic about it.

Look at the "S" cleat fabrication at the left, for example. It's about as ornery a job as you can face. Yet Weirkote makes it easy.

You can bead it, crimp it, twist it, draw it, work it to the limits of the steel itself. Doesn't matter what the job or how demanding it is. Weirkote's continuous process integrates the zinc and the steel so that the most complicated forming operations are made without chipping or peeling.

And *now* Weirkote is treated to inhibit wet storage (white oxide) stain. Your finished product has the enduring anti-rust protection you want it to have. You save yourself a lot of rejects, a lot of annoyance. Your costs, from purchase of Weirkote through end product, are pleasingly low. Your customers get even more value for their money.

Weirkote may help *you* to make an even better product at an even lower cost. For free 12-page booklet of facts and technical data, write to Weirton Steel Company, Department A-9, Weirton, West Virginia.



**WEIRTON STEEL
COMPANY**

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION





IMPORTANT MESSAGE FOR STEEL BUYERS!

You get Maximum Production Efficiency when
you take advantage of our

- Local Alloy Steel Stocks
- Complete Handling & Cutting Facilities
- Fast Delivery
- Personal Service



More and more companies
are learning that it really pays to
make full use of their local
Steel Service Centers, such as
Wheelock, Lovejoy.

They find that by using our
extensive local alloy steel stocks,
they get cut-to-size steel

*without scrap and wastage . . . without the considerable
costs of maintenance and floor space, handling and
cutting equipment, taxes and insurance.*

Moreover, their needs are filled FAST, due to the
speedy local delivery service we offer.

Here is the easy and sensible way for you to avoid
burdensome inventory costs, to make more efficient use
of your capital and your floor space, and to avoid
costly emergencies!

Our complete facilities, service, and stocks are at
your disposal. Call in your nearest Wheelock, Lovejoy
representative. He will gladly show you how to get
the most benefit out of the services we offer.

Write today for your FREE COPY of the Wheelock,
Lovejoy Data Book. It contains complete technical infor-
mation on grades, applications, physical properties,
tests, heat treating, etc.

WHEELOCK, LOVEJOY & COMPANY, INC.

126 Sidney Street, Cambridge 39, Mass.

AGENTS:

Southern Engineering Company, Charlotte, N. C.;
Sanderson-Newbould, Ltd., Montreal & Toronto

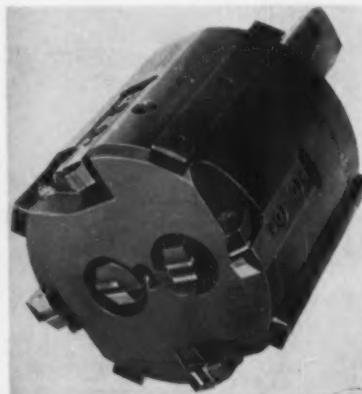
NEW EQUIPMENT

nating corrosion. Union nuts at
each end simplify installation and
ease disassembly. (B. F. Goodrich
Industrial Products Co.)

For more data circle No. 47 on postcard, p. 127

Boring Quills

Designed to combine operations,
these special quills use throw-away
carbide inserts. Boring, turning,
facing and counterboring can be
done at one time to close tolerances.
The outside cutting inserts are ad-

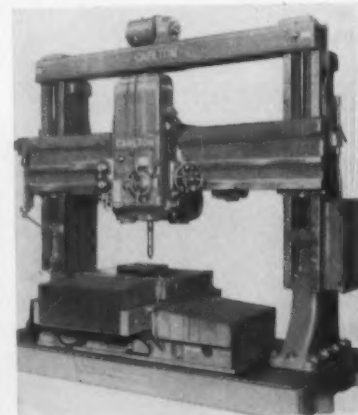


justable both radially and axially.
Often, changing insert holders per-
mits use on more than one job.
(Wesson Co.)

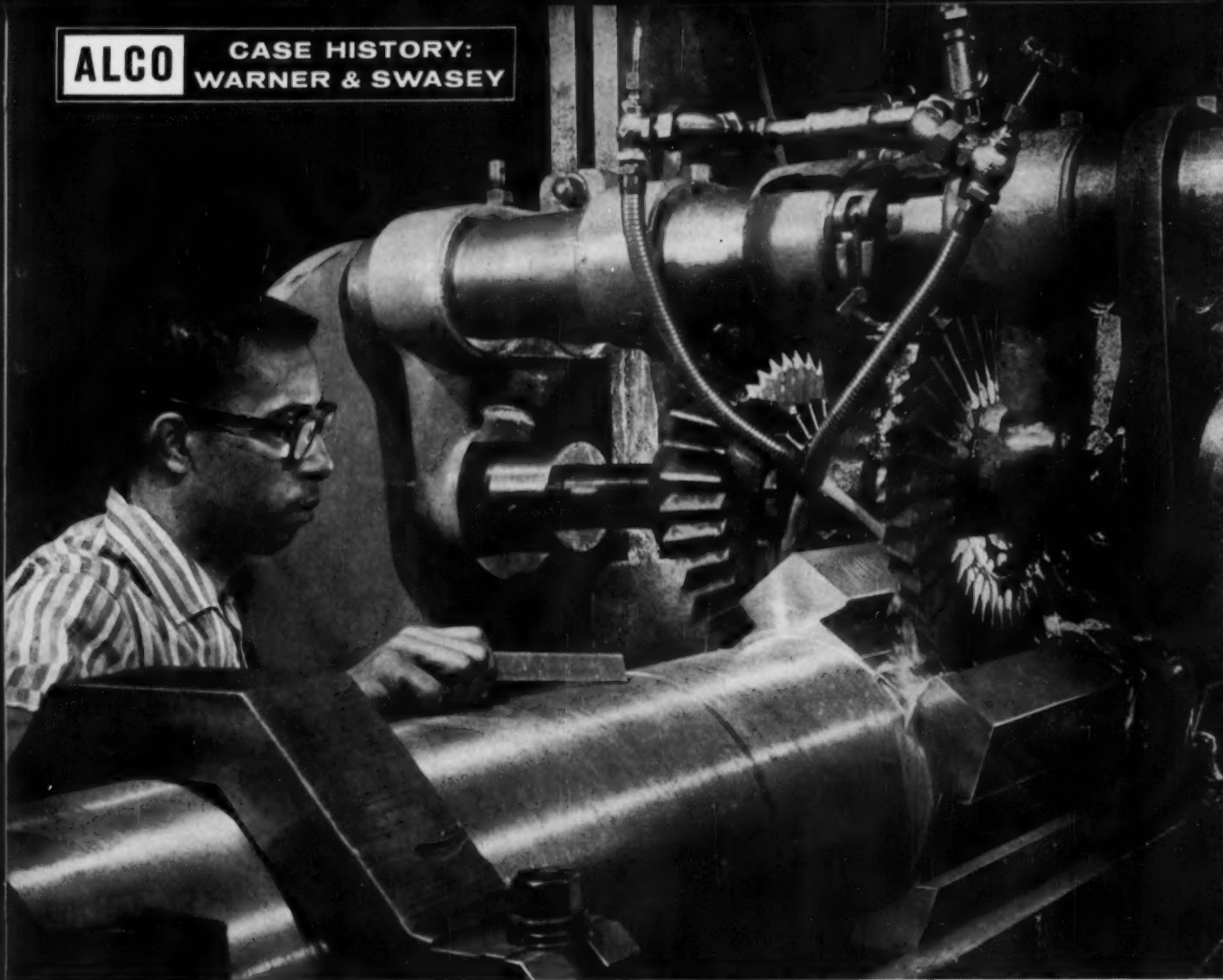
For more data circle No. 48 on postcard, p. 127

Vertical Drill

Using either tape or hydraulical-
ly controlled positioning tables, this
rigid machine handles heavy-duty



drilling and boring jobs. When so
equipped, it eliminates jigs and al-
lows fast work positioning under

ALCO**CASE HISTORY:
WARNER & SWASEY**

With ALCO's Hi-Qua-Led Steel forgings, Warner & Swasey reduced time for straddle-mill dovetailing of tool holder's pentagon shape by 71%.

MACHINE TIME CUT 33%, TOOL LIFE TRIPLED WITH ALCO'S HI-QUA-LED® STEEL FORGINGS

With open-die forgings of ALCO's special free-machining Hi-Qua-Led Steel, Warner & Swasey has reduced machining time 33% on a pentagon-bar tool holder for their automatic chucking machine. Time for the various milling operations has been reduced as much as 71%, and turning time 33%.

Warner & Swasey has found that in every operation the use of Hi-Qua-Led forgings has meant savings in tool life, machining time or both. In the trepanning operation, run at the same speed as before, the life of expensive tools has increased up to three times.

ALCO's Hi-Qua-Led Steel forgings have unique advantages of machinability, while maintaining the physical characteristics of regular forgings of the same grade. Cost is just a few cents more. Circular shapes, forged and rolled, range from 18 to 145 in. OD; open-die shapes from 1000 to 30,000 lbs and up to 40 ft long; mandrelled ring forgings up to 60 in. wide.

Contact your nearest ALCO sales office for full information on the many advantages of Hi-Qua-Led Steel forgings, or write ALCO Products, Department 154, Schenectady, New York.

ALCO**ALCO PRODUCTS, INC.**

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES • DIESEL ENGINES • NUCLEAR REACTORS • SPRINGS • STEEL PIPE • FORGINGS • OIL FIELD EQUIPMENT

METAL TREATING WITH MAGNETHERMIC INDUCTION HEATING

When you need 52100 steel bars and tubes go direct to Peterson....world's largest stocks. **NOTE:** For better machineability specify *lead*ed bars.

52100



PETERSON

STEELS, INC.

Union, New Jersey • Detroit, Michigan • Chicago, Illinois

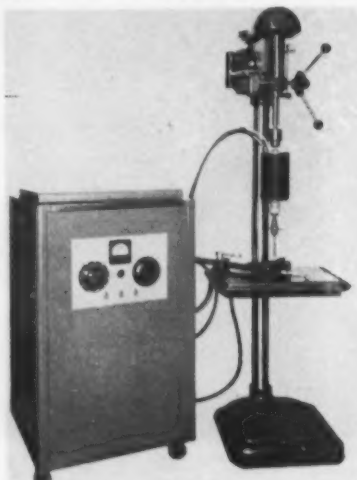
NEW EQUIPMENT

the drill. Other operating features of the double box column unit include: (1) twin screw elevating for the rails, (2) movable headstock to ease table loading, (3) pre-select or manual spindle speed control, (4) a micrometer dial on the feed wheel for precision depth boring. (Carlton Machine Tool Co.)

For more data circle No. 49 on postcard, p. 127

Metal Disintegrator

Suited for salvage work in removing broken taps, reamers, studs and the like, this electric-arc metal disintegrator has its own pumping system. It is designed to be used in



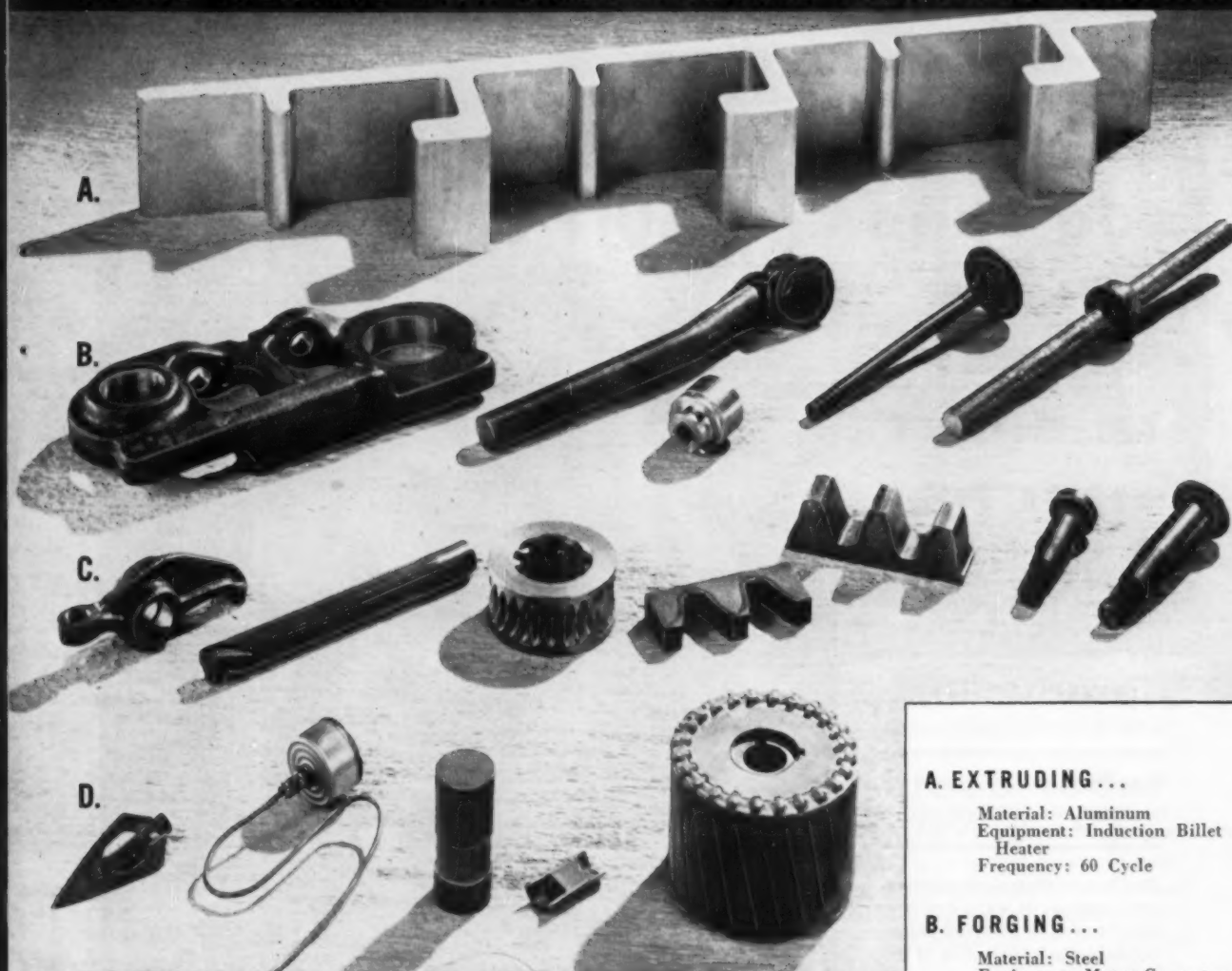
conjunction with other shop equipment such as drill presses. The cutting tools are electrodes held in the disintegrator head. A series of intermittent electric arcs perform the cutting action. Coolant from the system's own pump goes through the electrodes to wash away the chips. (Cammann Mfg. Co.)

For more data circle No. 50 on postcard, p. 127

Shearing Attachment

A new shearing attachment cuts steel plate up to 1/2-in. thick and 4 ft long on a hydraulic press brake. Easily installed and removed, the attachment does the work of a conventional shear. It features positive hydraulic hold-downs and shockless shearing for long knife life. (Pacific Industrial Mfg. Co.)

For more data circle No. 51 on postcard, p. 127



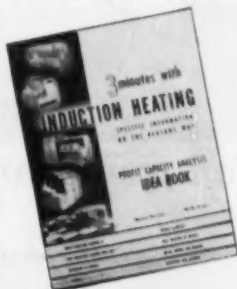
ten years ago . . .

INDUCTION HEATING never entered this picture

Parts like these were heated by costly, conventional methods. The amazing potentials of induction heating had not yet been realized.

Today, MAGNETHERMIC induction heat processes such parts in seconds, with complete production-line automation. Cost-conscious production men everywhere call on MAGNETHERMIC for important cost reductions in all types of metal treating . . . surface hardening, tempering, annealing, stress relieving, and billet heating, to name a few.

Tomorrow, new products, many unheard of today, will require still newer heating techniques. MAGNETHERMIC engineers, creative leaders in the field, are ready with the newest concepts in induction heating to help you reach new production horizons.



This "A-B-C's of Induction Heating" booklet will be most helpful. Write today for your free copy. Send a part or detail prints for authoritative analysis.

A. EXTRUDING...

Material: Aluminum
Equipment: Induction Billet Heater
Frequency: 60 Cycle

B. FORGING...

Material: Steel
Equipment: Motor Generator
Frequency: 3,000 and 10,000
Cycles per Second

C. HARDENING...

Selective and Surface
Material: Steel
Equipment: Motor Generator,
Electronic Induction Heater
Frequency: 10,000 Cycles per
Second; 450,000 Cycles per
Second

D. BRAZING...

Material: Copper, Brass, Steel
Equipment: Motor Generator,
Electronic Induction Heater
Frequency: 10,000 Cycles per
Second; 450,000 Cycles per
Second

MAGNETHERMIC®
CORPORATION
3990 SIMON RD. • YOUNGSTOWN 7, OHIO

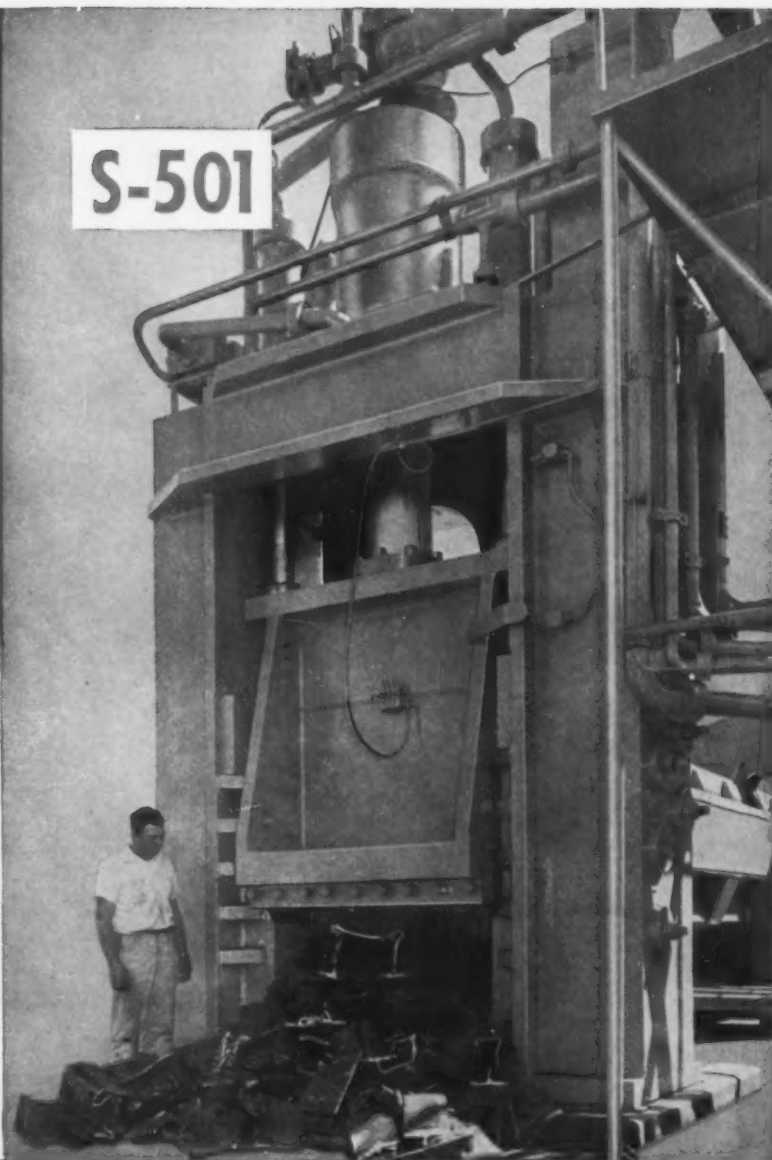
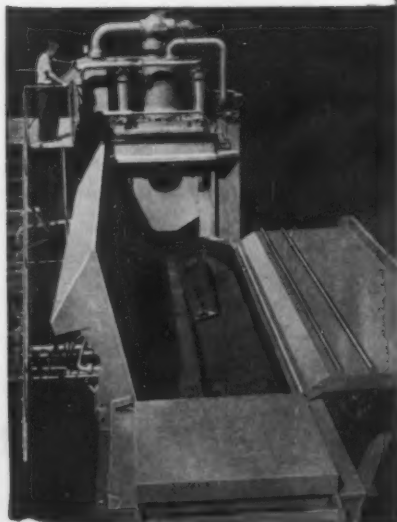
Engineering Idea Leadership in Induction Heating
60 to 450,000 Cycles

**CUTS
200 TONS
PLATE
SCRAP
IN EIGHT
HOURS**

**production
is continuous**

**labor costs
70% lower**

The Harris Shear is revolutionary in design. It is the first new development in the scrap industry since the introduction of the Baling Press. Railroad scrap, pipe, farm, industrial, automobile and miscellaneous junk shop scrap work through on a 12 second cycle. A 3 man crew and a crane handle the job in all kinds of weather.



The Harris Shear brings new profits to Scrap Yards

The charging box is 264" x 80" x 30". It has a flat type loading hopper. The cover and charging ram operate like a baler. This means more material under each stroke of the knife.

**HARRIS FOUNDRY
& MACHINE CO.**

Hydraulic Engineers Since 1889

CORDELE, GEORGIA

► ***Talk with a Man from Harris***

The Iron Age Summary

Is the Worst Over for Steel?

More mills are coming around to the belief that their market has touched bottom.

But this does not mean an overnight pickup. Road ahead will be no picnic.

■ It's not much to cheer about, but more and more steel men are beginning to believe that their market has at last touched bottom. They feel that nothing much more can happen to them, that from here on out a slow, painful pickup is in the cards.

The mills base their appraisal of the outlook on the fact that (1) demand from the automotive industry can't get any worse, (2) good weather will bring a pickup in highway and other construction, and (3) steel inventories of many of their customers have about touched bottom.

No Overnight Pickup—This does not mean that there will be an overnight upturn in demand. Some high-placed steel men are convinced that

the second quarter will be no better than the first, which was one of the worst in recent years. They don't look for much either in third quarter. But they do feel that the worst may be over, that they will at least hold their own from now until later in the year when they expect a reasonably encouraging pickup.

"We have several indications that the bottom in demand for our products was passed some time ago," says one producer.

"Customer inventories are at rock bottom," adds a specialty mill.

"We're bottoming out," says a sheet producer, "but it's a broad, bumpy bottom."

Product Outlook—Here's a run-down on the outlook for major steel products:

Sheets: Not much of a pickup expected before August, if then. Automotive companies are virtually out of the market, apparently have enough on hand to get them through the 1958 model run. April shipments are running a shade below

March, and May could show a further dip.

Pipe and Tubing: No pickup in shipments, although both buyers and sellers feel a shade more optimistic. Early April orders were up sharply over the same March period, but there's not enough evidence to indicate a trend.

Bars: Government contracts have nudged hot-rolled bar sales up slightly. In some areas April orders are holding up to March thus far and should equal them in the basis of incoming orders. As for cold-finished bars: "I don't expect to live long enough to see any improvement," moans one salesman.

Plate and Structural: Midwestern mills report a mild pickup in structural orders, due partly to increased fabricated structural bookings, partly as a hedge against an expected price boost. Demand for plate continues to lag.

Tinplate: A bright spot. Shipments are setting a steady pace, and the canmakers' business indicates this rate will be sustained.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
Ingot Index (1947-1949=100)	79.9	81.4	88.2	144.2
Operating Rates				
Chicago	54.0	55.0*	55.0	88.0
Pittsburgh	50.5	48.5*	56.5	94.0
Philadelphia	54.0	50.5	56.0	103.0
Valley	33.5	37.5*	41.0	87.0
West	68.0	67.5*	73.5	100.0
Cleveland	25.0	31.0*	31.5	90.0
Buffalo	39.0	39.0	37.0	93.0
Detroit	11.0	13.0	42.0	98.0
South	54.5	47.5	47.5	95.5
South Ohio River	49.0	41.0*	53.5	63.0
Upper Ohio River	63.5	73.0*	75.0	87.0
St. Louis	50.0	59.0*	69.0	99.0
Northeast	31.0	31.0	31.0	64.0
Aggregate		48.5	52.5	90.5

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.670
Pig Iron (Gross ton)	\$66.49	\$66.49	\$66.49	\$64.56
Scrap, No. 1 hvy (Gross Ton)	\$32.83	\$33.50	\$36.33	\$42.17
No. 2 bundles	\$24.17	\$24.83	\$27.17	\$34.50
Nonferrous				
Aluminum ingot	26.10	26.10	26.10	27.10
Copper, electrolytic	25.00	25.00	25.00	32.00
Lead, St. Louis	11.80	11.80	12.80	15.80
Magnesium ingot	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	92.25	92.50*	95.00	99.875
Zinc, E. St. Louis	10.00	10.00	10.00	13.50

Scale Makers Sell Cost Benefits

Customers urged to improve weighing equipment by up-dating and modernizing it.

Manufacturers optimistic about 1958 sales as market shows some improvement.

■ Customers are getting red carpet treatment from industrial scale manufacturers these days.

With sales off and backlogs declining, the scale makers are out to line up orders. They are assuring purchasers this is the time to buy. These are some of the sales arguments used:

Deliveries are good, current on all except specialized equipment. Prices will remain unchanged at least until mid-year. After that date increases are a possibility, but not a strong one.

Go Modern—The builders are urging customers to improve their weighing equipment by up-dating and modernizing it. Accurate, efficient scales, they point out, are vital in a cost-conscious market where production economies are essential.

There's evidence that the sales drive is paying dividends. The market for scales has improved in recent months. And manufacturers are confident the improvement will continue.

Shipments Climb—Shipments rebounded in the fourth quarter after a third quarter low for the year. Scale manufacturers at recent industry meetings reported new orders had picked up and inquiries were gaining, after eight months of decline. Many felt that 1958 volume will just about equal that of 1957, the best year for the industry.

Scale builders recently surveyed by The IRON AGE are just as optimistic. Two-thirds of them said sales are improving. The majority expect that '58 sales will equal those of '57. Others even predict an increase over '57 levels. All admit that backlogs are down and deliveries current. Three-fourths feel scale prices will not rise during 1958. A few believe that further increases in raw material and labor costs could bring price hikes after mid-year.

Swing to Electronics—When asked about the most important trends in the industry they mentioned: (1) the growing use of electronic and electrical weighing and (2) the increasing use of scales to control operations.

Four manufacturers sum it up this way:

"Controls applied to weighing can be used to run practically the whole plant in a sequence of operations. In other cases parts of the plant can be handled with the scale as the primary guidance instrumentation. In addition to automatically handling control from a central point, weighing equipment is gradually coming to the stage where it supplies—automatically—typed records, punched cards, visual records, or tape records for data collecting and recording right from the production line."

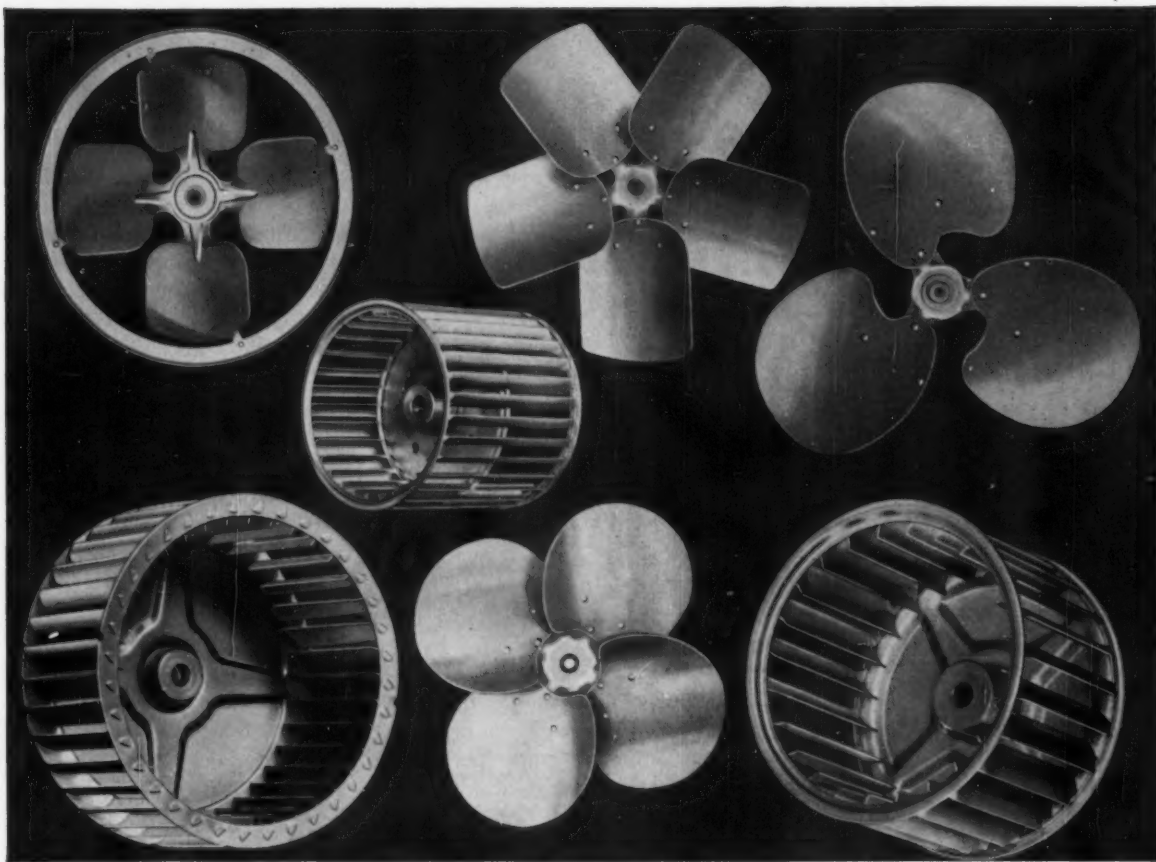
"Continuous weighing devices are gaining in popularity while demand for batching and static types of scales is leveling off."

"Load cells with appropriate data processing equipment will enjoy increased acceptance."

"There will be a broad expansion in electronic scale use within the next few years. This will come because these units make possible cost reductions through automation."



PROCESSING BY CARD: Direction of batch weighing is done by pre-punched card containing weight formulas and process sequence data. Operator merely inserts card and presses button. Unit handles process automatically and provides regular records. (Fairbanks, Morse & Co. photo.)

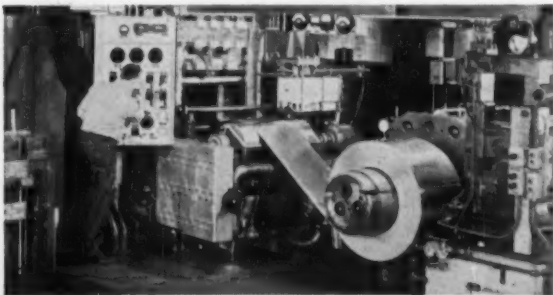


A FEW OF THE MANY air impeller units made by The Torrington Manufacturing Company, Torrington, Conn. Fan blades are fabricated from Anaconda Aluminum Coiled Sheet 3003. Blower wheels use Alloys 5050 and 5052.

Uniformity of Anaconda Aluminum Coiled Sheet helps Torrington maintain high quality in air impellers

The Torrington Manufacturing Co. is a leading supplier of air impellers to the air conditioning, heating, and ventilating industries. Its products range from blade assemblies for window fans to blower units for big Air Force bombers.

For products fabricated from aluminum, the company has turned to Anaconda Aluminum Coiled Sheet and has found that the uniformity of metal in shipment after shipment has made it easier to maintain the high quality standards established for its air impellers.



AVAILABLE FOR PROMPT SHIPMENT TO ALL POINTS IN THE U. S. Anaconda Aluminum Coiled Sheet in gages from 0.006" to 0.064" and in widths from 3" to 28"; coils up to 100 pounds per inch of width, in alloys: 1100, 3003, 3004, 5005, 5050, 5052.

THE IRON AGE, April 17, 1958

The Torrington Manufacturing Co. stamps components from large coils of aluminum sheet. Fans range from 1½" to 30" diameter; blower wheels, from 1½" to 15" diameter.

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FOR IMMEDIATE ACTION

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8798

ANACONDA®
ALUMINUM COILED SHEET

Made by The American Brass Company

Inventoryitis Still Snags Salesmen

Users may be getting to the bottom of supplies but it hasn't helped the market yet.

The order famine has salesmen pulling out all the stops to get business.

■ How much lower will customer inventories get before buyers step up ordering?

Steel salesmen wish they knew the answer. For the moment users go on burrowing into stocks, replacing them only when absolutely necessary.

Factors that might work for an improvement in business are having a reverse effect. For example: Some buyers are getting concerned about the prospect of rising steel prices at mid-year. They have increased their May and June tonnages to a degree. But to keep inventories in line they have cut back on April tonnages.

Amid the famine in ordering the mills and their salesmen go on hunting for business. They are combing the woods looking for new customers. Some are accepting orders for less than carload lots. Warehouses report buyers insist on deliveries in terms of hours.

Sheet and Strip—Producers don't look for any important market improvement before late summer. April shipments will have difficulty holding to the pace for March. There are indications some buyers are thinking ahead to possible price increases at mid-year because some May and June tonnages have already been booked.

Orders for galvanized sheet are leveling out after a mild pickup in

February and March. Farm buying of galvanized is tapering off seasonally. Home construction use has not come along strong enough to take up the slack. The market for electrical sheet is lifeless.

Bars—Buyers of hot-rolled bars in the Eastern Pennsylvania area, working on newly-released government contracts for shells, have stepped up their orders. Bar producers are grateful for the pickup, but it's only helped to a degree. Cold-finished bar remains very slow. Stainless bar is also weak. One producer in the East is operating its mill at 50 pct of capacity.

At Cleveland, April bar orders are holding at March levels. Fabricators, especially forgers, are operating on slim inventories. They are ordering steel strictly on a rush basis.

Pipe and Tubing—Sales of oil casing and tubing remain in the doldrums. Drillers say they have plenty of pipe inventory, even if the drill-rate does improve.

Republic Steel Corp. has re-lighted four open hearth furnaces at Gadsden, Ala., and is resuming operations on its large diameter pipe mill there. Orders for pipe for

use in natural gas transmission lines brought the return to production. Republic hopes other orders on its books can be processed after this initial tonnage is completed.

Pig Iron—Steelmaking slowdown and foundry slackness continue crippling the market. Sellers are slightly encouraged by some improvement in foundry activity. Formerly on 3 or 4 day workweeks, some foundries are again operating 4 or 5 days a week.

Republic Steel Corp. topped its monthly pig iron production record last month at its Warren, O., blast furnace. An output of 62,092 tons in March broke Republic's previous record of 56,050 tons, also established by the furnace in January, 1958.

Tinplate—Mill operations continue at a steady rate. Shipments of cans indicate the market should retain its strength. Can shipments in January and February showed a substantial increase over those for the same months in 1957. The recent cut in tinplate prices announced by British producers is expected to make the U. S. export market more competitive.

Stainless—Mills believe they will notice an upturn in sales before carbon steel producers. Buyer inventories are really at rock bottom, they say, and any improvement will quickly show up in orders. However, April shipments are running at March levels and there's no pickup in sight.

Carpenter Steel Co. has established Bridgeport, Conn., as a producing and shipping point for all its grades of stainless steel shipped to the major part of New England and metropolitan New York City. The company is now producing stainless in Bridgeport at its new subsidiary, Carpenter Steel of New England, Inc.

Warehouses—Some warehouses are laying in slightly more stock than they did last month. Part of this may be hope for coming better sales, part hedge buying against any higher mill prices this summer.

PURCHASING AGENT'S CHECKLIST

Increases in steel prices are still likely. **P. 65**

Fabricated structural market has improved. **P. 68**

How to spot an upturn in business. **P. 73**

COMPARISON OF PRICES

(Effective April 15, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Apr. 15 1958	Apr. 8 1958	Mar. 18 1958	Apr. 16 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.675
Cold-rolled strip	7.17	7.17	7.17	6.870
Plate	5.12	5.12	5.12	4.87
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	50.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$10.30	\$10.30	\$10.30	\$9.95
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	8.65
Special coated mfg. ternes	9.55	9.55	9.55	9.20
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	43.25
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Nails: (per 100 lb.)				
Heavy nails	\$5.525	\$5.525	\$5.525	\$5.275
Light nails	6.50	6.50	6.50	6.25
Semi-finished Steel: (per net ton)				
Re-rolling billets	\$77.50	\$77.50	\$77.50	\$74.00
Slabs, re-rolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80¢
Skelp	4.875	4.875	4.875	4.225
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.670¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

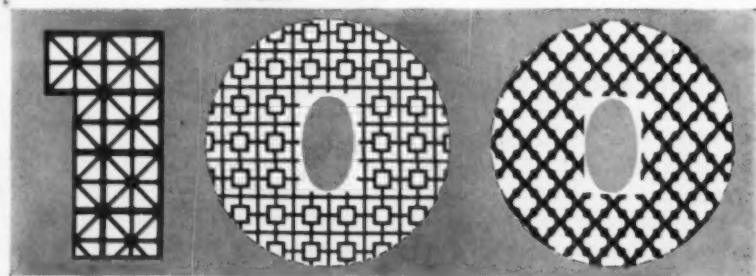
	April 15 1958	April 8 1958	March 18 1958	April 16 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$70.97	\$70.97	\$70.97	\$68.88
Foundry, Valley	66.50	66.50	66.50	65.00
Foundry, Southern Cin'ti	73.87	73.87	73.87	67.17
Foundry, Birmingham	62.50	62.50	62.50	59.00
Foundry, Chicago	66.50	66.50	66.50	65.00
Basic, del'd Philadelphia	70.47	70.47	70.47	68.38
Basic, Valley furnace	66.00	66.00	66.00	64.50
Malleable, Chicago	66.50	66.50	66.50	65.00
Malleable, Valley	66.50	66.50	66.50	65.00
Ferromanganese 74-76 pct Mn.				
cents per lb.	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	\$66.49	\$66.49	\$66.49	\$64.56
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$32.50	\$33.50	\$36.50	\$41.50
No. 1 steel, Phila. area	36.50	37.50	38.00	45.50
No. 1 steel, Chicago	29.50	29.50	34.50	39.50
No. 1 bundles, Detroit	21.50	22.50	29.50	34.50
Low phos., Youngstown	32.50	33.00	38.50	41.50
No. 1 mach'y cast, Pittsburgh	49.50	49.50	51.50	49.50
No. 1 mach'y cast, Phila.	47.50	49.50	49.50	55.50
No. 1 mach'y cast, Chicago	33.50	44.50	48.50	45.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	\$32.83	\$33.50	\$36.33	\$42.17
No. 2 bundles	24.17	24.83	27.17	34.50
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$15.38	\$15.38	\$15.38	\$15.38
Foundry coke, prompt	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	25.00	25.00	25.00	32.00
Copper, Lake, Conn.	25.00	25.00	25.00	32.00
Tin, Straits, N. Y.	92.25¢	92.50*	95.00	99.875
Zinc, East St. Louis	10.00	10.00	10.00	13.50
Lead, St. Louis	11.80	11.80	12.50	15.80
Aluminum, virgin ingot	26.10	26.10	28.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

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Market Again Gropes For the Bottom

Even the optimists doubt if the bottom of the trend has been reached.

Some scrap moves at almost any offer within reason, indicating dealer plight.

• The old question, "When will the market hit bottom?" is back again.

For the most part, prices continue their downtrend, with little hope of any sizable buying in the near future to establish a floor under the market.

Little mill buying is in prospect. Token orders here and there indicate that some scrap will move at almost any offer within reason. Although the trade is doing its best to resist further drops, too many dealers are in too tight a squeeze to present a united front.

The mill inventory picture is not clear, but inventories are not universally large. It depends on the local situation and on the mill operating rates.

In some areas, any sharp upturn in steel operations would force active mill buying.

Export, which had held up the market in coastal areas, is now a question mark, further deepening the market gloom.

Pittsburgh — Prices of dealer openhearth grades are down \$1 as the local lag has dealers shipping out of the district at reduced prices. On freight hauls of about \$5, a broker price of \$33 for No. 1 heavy melting is drawing scrap from the district. The figures only indicate that a small amount of scrap is available for whatever price a buyer names.

Chicago — Mill buying continues in dribbles. Broker buying continues at a somewhat stronger pace, pegged by weak mill buying and out-of-area shipments, as well as old orders which run through April and into May in some cases. Scrap stocks in yards haven't shown quite the buildup expected earlier, with many yards receiving about half normal intake from scrap producers. Barging of scrap to eastern and southwestern areas continues to siphon off enough to prevent any major buildup.

Philadelphia — You could cut the gloom with a knife. No one was making any bones about the market: It's bad. No. 1 heavy melting steel was off \$1 to a shaky \$37 per ton. Some sources felt it was even worse than that, but one broker was still paying \$36 to cover a \$37 order. Outlook for export, the one bright spot to date, is not too promising.

St. Louis — Reductions of \$2, established by a leading mill last week on heavy melting steel and No. 1 bundles, and \$3 on No. 2 bundles were restored, since offerings went to another mill which bought at unchanged prices. Most other items were down \$1 to \$3. Movement is light.

Birmingham — There was some activity in all segments of the market, but purchases were limited. Lower prices for most items had been anticipated and brokers had no trouble placing orders with heavily overloaded dealers. An Alabama mill bought openhearth scrap at \$3 below last quotations and an Atlanta mill has indicated it may buy soon at similar reductions.

Cincinnati — The market ran \$1 weaker as orders for the month from area mills were quickly filled and no new ones are in sight for several weeks. Dealers are more willing to sell than a few weeks ago. The foundry strike continues to kill the cast market.

New York — Steelmaking grades fell \$2 a ton in the face of a lack of orders. Top is now \$30 for No. 1 heavy melting. Turnings remain dead, and even present low prices are virtually token. Clean cast chemical borings business is nil, with brokers refusing cars. Price is down \$3 on appraisal, with practically nothing moving.

Detroit — The market settled another notch this week on appraisal. Mills still haven't indicated they will buy scrap next month. They didn't buy this month. Dealers are comparing present prices with 1949 and 1954, conclude bottom has yet to be reached. Two stainless scrap grades were incorrectly quoted April 10. Correct prices are established this issue.

Cleveland — The market tone continued to weaken as token lots of specialty grades sold off \$1 or more. Business is almost non-existent and dealers can find no home for tonnage at any price. Under-market offerings are being widely made, but mills are now talking in terms of cutting inventory investment in favor of cash.

Buffalo — Prices of steelmaking grades are off \$1 on appraisal. There has been no activity in a steadily weakening market. Pessimism prevails among dealers here.

Boston — Prices have collapsed on a broad front. Absolutely no demand at all for any item on the list. Prices of primary grades are down as much as \$3 to \$4.

West Coast — There are no price changes in Los Angeles, San Francisco and Seattle. Influx of scrap is meager. Some dealers are reported to be in poor financial condition. No. 2 bundles continue weak, but are finding a home.

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SCRAP PRICES

(Effective April 15, 1958)

Pittsburgh

No. 1 hvy. melting	\$32.00 to \$33.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	32.00 to 33.00
No. 1 factory bundles	36.00 to 37.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and ms. turn.	14.00 to 15.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. punch'g's plate	36.00 to 37.00
Heavy turnings	28.00 to 29.00
No. 1 RR hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	50.00 to 51.00
Rails 2 ft and under	54.00 to 55.00
RR steel wheels	46.00 to 47.00
RR spring steel	46.00 to 47.00
RR couplers and knuckles	46.00 to 47.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	31.00 to 42.00
Heavy breakable cast.	39.00 to 40.00
Stainless	
18-8 bundles and solids	170.00 to 175.00
18-8 turnings	105.00
430 bundles and solids	95.00 to 100.00
410 turnings	45.00

Chicago

No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	29.00 to 30.00
No. 1 factory bundles	34.00 to 35.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. forge crops	44.00 to 45.00
Low phos. punch'g's plate	37.00 to 38.00
Low phos. 3 ft and under	35.00 to 36.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rails, random lgth.	44.00 to 45.00
Rerolling rails	53.00 to 54.00
Rails 2 ft and under	49.00 to 50.00
Locomotive tires cut	43.00 to 44.00
Cut bolsters & side frames	40.00 to 41.00
Angles and splice bars	40.00 to 45.00
RR steel car axles	53.00 to 54.00
RR couplers and knuckles	40.00 to 41.00
No. 1 machinery cast.	43.00 to 44.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	33.00 to 34.00
Cast iron brake shoes	35.00 to 36.00
Cast iron wheels	32.00 to 33.00
Malleable	48.00 to 49.00
Stove plate	35.00 to 36.00
Steel car wheels	38.00 to 39.00
Stainless	
18-8 bundles and solids	160.00 to 165.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	90.00 to 95.00
430 turnings	45.00 to 50.00

Philadelphia Area

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	15.00 to 16.00
Mixed bor. short turn.	16.00 to 17.00
Cast iron borings	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
Clean cast. chem. borings.	31.00 to 32.00
Low phos. 5 ft and under.	40.00 to 41.00
Low phos. 2 ft and under.	41.00 to 42.00
Low phos. punch'g's	41.00 to 42.00
Elec furnace bundles	37.00 to 38.00
Heavy turnings	32.00 to 33.00
RR steel wheels	43.50 to 44.50
RR spring steel	43.50 to 44.50
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	44.00 to 45.00
Malleable	60.00 to 61.00
Unstripped motor blocks.	30.00 to 31.00
No. 1 machinery cast.	47.00 to 48.00

Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$28.50 to \$29.50
No. 2 hvy. melting	26.50 to 27.50
No. 1 dealer bundles	28.50 to 29.50
No. 2 bundles	19.00 to 20.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	11.00 to 12.00
Low phos. 18 in. and under	36.00 to 37.00
Rails, random length	43.00 to 44.00
Rails, 18 in. and under	53.00 to 54.00
No. 1 cupola cast.	38.00 to 39.00
Hvy. breakable cast.	32.00 to 33.00
Drop broken cast.	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	28.00 to 29.00
No. 1 factory bundles	31.00 to 32.00
No. 2 bundles	19.00 to 20.00
No. 1 bushelings	28.00 to 29.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cut structural & plates, 2 ft & under	35.00 to 36.00
Drop forge flashings	28.00 to 29.00
Low phos. punch'g's plate	29.00 to 30.00
Foundry steel, 2 ft & under	32.00 to 33.00
No. 1 RR heavy melting	34.50 to 35.50
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	17.00 to 18.00
Railroad cast.	46.00 to 47.00
No. 1 machinery cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Malleable	58.00 to 59.00
Stainless	
18-8 bundles	160.00 to 165.00
18-8 turnings	85.00 to 90.00
430 bundles	90.00 to 95.00
430 turnings	40.00 to 45.00

Buffalo

No. 1 hvy. melting	\$27.00 to \$28.00
No. 2 hvy. melting	24.50 to 25.50
No. 1 busheling	27.00 to 28.00
No. 1 dealer bundles	27.00 to 28.00
No. 2 bundles	21.50 to 22.50
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	14.00 to 15.00
Low phos. plate	33.00 to 34.00
Structural and plate, 2 ft and under	36.00 to 37.00
Scrap rails, random lgth.	40.00 to 41.00
Rails 2 ft and under	50.00 to 51.00
RR steel wheels	37.00 to 38.00
RR spring steel	33.00 to 34.00
RR couplers and knuckles	33.00 to 34.00
No. 1 machinery cast.	45.00 to 46.00
No. 1 cupola cast.	41.00 to 42.00

St. Louis

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	16.00 to 17.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
No. 1 RR hvy. melting	35.00 to 36.00
Rails, random lengths	43.00 to 44.00
Rails 18 in. and under	50.00 to 51.00
Angles and splice bars	45.00 to 46.00
Std. steel car axles	48.00 to 49.00
RR specialties	38.00 to 39.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	32.00 to 33.00
Cast iron brake shoes	37.00 to 38.00
Stove plate	38.00 to 39.00
Cast iron car wheels	35.00 to 36.00
Rerolling rails	52.00 to 53.00
Unstripped motor blocks.	34.00 to 35.00

Birmingham

No. 1 hvy. melting	\$30.00 to \$31.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	35.00 to 36.00
Elec. furnace, 3 ft & under	33.00 to 34.00
Bar crops and plate	38.00 to 39.00
Structural and plate, 2 ft.	38.00 to 39.00
No. 1 RR hvy. melting	33.00 to 34.00
Scrap rails, random lgth.	41.00 to 42.00
Rails, 18 in. and under	47.00 to 48.00
Angles & splice bars	41.00 to 42.00
Rerolling rails	47.00 to 48.00
No. 1 cupola cast.	49.00 to 50.00
Stove plate	48.00 to 49.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	36.00 to 37.00
Unstripped motor blocks.	38.00 to 39.00

Youngstown

No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	12.00 to 13.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Low phos. plate	32.00 to 33.00

New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	17.50 to 18.50
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Clean cast. chem. borings.	22.00 to 23.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	34.00 to 35.00
Charging box cast.	32.00 to 33.00
Heavy breakable cast.	32.00 to 33.00
Unstripped motor blocks.	25.00 to 26.00
Stainless	
18-8 prepared solids	140.00 to 145.00
18-8 turnings	50.00 to 55.00
430 prepared solids	70.00 to 75.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$21.00 to \$22.00
No. 2 hvy. melting	16.00 to 17.00
No. 1 dealer bundles	22.00 to 23.00
No. 2 bundles	12.00 to 13.00
No. 1 busheling	21.00 to 22.00
Drop forge flashings	20.00 to 21.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and turn.	6.00 to 7.00
Shoveling turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Low phos. punch'g's plate	22.00 to 23.00
No. 1 cupola cast.	31.00 to 32.00
Heavy breakable cast.	21.00 to 22.00
Mixed cupola cast.	26.00 to 27.00
Automotive cast.	31.00 to 32.00
Stainless	
18-8 bundles and solids	170.00 to 175.00
18-8 turnings	70.00 to 75.00
430 bundles and solids	90.00 to 95.00
410 turnings	25.00 to 30.00

Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$23.00 to \$24.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	13.00 to 14.00
No. 1 busheling	23.00 to 24.00
Elec. furnace, 3 ft & under	29.00 to 30.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	9.00 to 10.00
Clean cast. chem. borings.	18.00 to 19.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	28.00 to 29.00
Heavy breakable cast.	29.00 to 30.00
Stove plate	26.00 to 27.00
Unstripped motor blocks.	24.00 to 25.00

San Francisco

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	42.00

Los Angeles

No. 1 hvy. melting	\$34.00
No. 2 hvy. melting	32.00
No. 1 dealer bundles	30.00
No. 2 bundles	22.00
Machine shop turn.	\$9.00 to 11.00
Shoveling turnings	11.00 to 13.00
Cast iron borings	11.00 to 13.00
Elec. turn, 1 ft and under (foundry)	45.00
No. 1 RR hvy. melting	36.00
No. 1 cupola cast.	41.00 to 43.00

Seattle

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 2 bundles	24.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Bushel, new fact., prep'd	20.00
Bush., new fact., unprep'd	28.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	\$45.00 to 50.00

New Team...

TITANIUM AND ZIRCONIUM

for your corrosion problem areas

Chart shows corrosion resistances of zirconium and titanium to typical chemicals.

TYPICAL CORROSION RESISTANCES OF ZIRCONIUM AND TITANIUM

CORROSIVE MEDIA	METAL RESISTANCE	
	ZIRCONIUM	TITANIUM
Sulfuric Acid	excellent to good below 80%	good below 5%
Nitric Acid	excellent	excellent
Hydrochloric Acid	excellent	good below 10%
Phosphoric Acid	excellent to fair below 85%	poor
Chromic Acid	excellent	excellent to good
Aqua Regia	poor	excellent
Wet Chlorine Gas	poor	excellent
Chlorine Water	excellent	excellent
Sodium Hydroxide	good below 90%	good below 50%
Ferric Chloride	poor	excellent
Calcium Chloride	excellent	excellent
Cupric Chloride	poor	excellent
Sodium Chloride	excellent	excellent
Ammonium Chloride	excellent	excellent
Aluminum Chloride	excellent	excellent to fair



Steam jet made of zirconium, which has given trouble-free performance after a year in hydrochloric acid service. For comparison, a throat piece from a steam jet (below) is shown after only a week of similar service.

By specifying titanium or zirconium for processing equipment, you can now overcome most of the corrosive media which attack other metals.

Even with such hard-to-handle chemicals as chlorides and oxidizing acids, equipment can have extremely long service life when made from these corrosion-resistant materials. Problems of product contamination in chemical and food processing can also be virtually eliminated.

Mallory-Sharon is in position to offer you *both* titanium and zirconium mill products for equipment fabrication—plus engineering assistance and unbiased recommendations on the most suitable material.

Titanium is now available from stock in a complete range of mill products, may be readily fabricated, and more than pays its extra cost where ordinary metals fail. Zirconium facilities are being rapidly increased, and mill shapes are now in production.

For information on the corrosion-resistant properties of titanium or zirconium write Mallory-Sharon Metals Corporation, Niles, Ohio.

MALLORY-SHARON

METALS CORPORATION • NILES, OHIO



Integrated producer of Titanium • Zirconium • Special Metals

Copper Warehouses Probe the Future

Brass and Copper Warehouse Assn. convention told there will be fewer of them around by 1975.

They must take over sales and order processing functions of the mills to survive.

■ In a business climate conceded to be "something less than rosy," copper and brass warehousemen found something to be cheerful about at their annual meeting this week. The subject: Tomorrow.

"In 1975 I see no distributors as we know them today," said Vincent J. Reade, Whitehead Metal Products Co., Inc., New York. Here is what he does see:

Take Over Sales—First, the distributor will have absorbed most of the sales and order processing functions of the brass mill. Second, there will be fewer distributors.

Mr. Reade sees the first as the most natural answer to the duplication of sales organizations by distributor and mill. The second will follow because: (1) only one distributor per mill will be needed, and (2) the growth of "Inter-urbia."

Inter-urbia—Definition of "Inter-urbia": An agglomeration of cities and surrounding densely populated, non-farming counties. Example: The "Six Hundred Mile City," between Maine and Virginia, in which only two strips, one of two miles and the other of 17 miles, are not part of a metropolitan area.

In this type of an area, says Mr. Reade, four or five terminals could deliver all materials on orders from sales offices which will carry only what is needed for display.

In order processing, the distributor will eliminate all less than full runs of any but very special items at the mills. He will maintain an inventory of the mill's finished stock for processing these small orders. The distributor will size, finish, temper, and perform other such services on these orders.

Automation—Most of the operations of both the mill and its distributor will be automated. Both will use the same integrated data and programming system. Magnetic drum memory units will calculate prices.

Mill machinery will be controlled by tape, cut by merely dictating orders into a microphone. Packing, sealing, and stacking will also be tape controlled, except for small and unusual orders.

Speedy Delivery—Deliveries to consumers, says Mr. Reade, will be by vertical take-off and landing aircraft for short distances, and steep gradient take-off and landing airplanes for longer hauls. The mills will ship by atom-powered trains with removable freight pods, electronic trucks, or even supersonic jets for emergency orders.

The four or five distribution terminals in an "Inter-urbia" will have geodesic domed roofs, with movable curtains or infra-red air blankets for walls.

Short term storage will be in air supported buildings of synthetic fabrics. These can be deflated and moved easily.

Working Force—Personnel at the terminals will be inspectors, maintenance men, and a few supervisors. In the office, clerical, ad-

ministrative and management personnel will be a fraction of today's force. But, Mr. Reade foresees that average intelligence and ability will be higher, and the employee will have better incentive or profit sharing plans.

Is Mr. Reade serious about his forecast? The Whitehead Metals executive says the distributor must assume this position in order to survive.

Lead and Zinc

Both sides of the lead-zinc tariff issue made it a point to get in some last licks before the U. S. Tariff Commission places its recommendations on President Eisenhower's desk.

Pro-Higher Tariff—In favor of more protection for the domestic miners, Andrew Fletcher, president, St. Joseph Lead Co., suggested a flat 4¢ import tax on both lead and zinc. If, as most of the trade expects, the Tariff Commission recommends using the "escape" clause in the Tariff Agreements Extension Act, the duty on lead would be 2.55¢, and on zinc 2.1¢ per lb.

An increased tariff would not be a windfall for the domestic industry, claimed Mr. Fletcher. "This is simply a means of equalizing the

Primary Prices

(cents per lb)	Current price	last price	date of change
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingot	26.10	28.10	4/1/58
Copper (E)	25.00	27.00	1/13/58
Copper (CS)	23.50	24.00	4/8/58
Copper (L)	25.00	27.00	1/13/58
Lead, St. L.	11.80	12.00	4/2/58
Lead, N. Y.	12.00	13.00	4/2/58
Magnesium ingot	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-200	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see next page; other primary prices, pg. 15f.

basis of competition with foreign producers so that we can meet them on even terms."

Despite a cut in his company's output of about 20 pct, the St. Joseph president said his unsold lead and zinc totals 65,000 tons. The 30,000 tons of zinc alone is worth \$6 million at today's prices, he said.

Anti-Higher Tariff—On the other side of the fence, a group called Committee For a National Trade Policy released a study of how a higher lead and zinc tariff would affect the state of Michigan. The conclusions were strictly negative.

The report said Michigan was selected as "more or less typical of a highly industrialized midwestern state."

Since no zinc or lead is produced in Michigan, any advantage would have to be indirect, as the result of a boost in overall prosperity, the report concludes. But, none could be seen.

On the other hand, both manufacturers and employees would suffer if higher tariffs pushed lead and zinc to uneconomic levels.

Copper

Production in Chile is off, but this doesn't appear to be injecting any strength into the U. S. market. Custom smelter business at 23.50¢ per lb is slow, and some say if it doesn't pick up the price may fall ½ ¢.

Kennecott announced its output at the Braden mine in Chile, this month will be about 13,000 tons. The monthly rate has been 17,000 tons. The cutback is due to a shortage of water power, normal at this time.

The strike at Anaconda's Chuquicamata operation is nearing its second week. Most of the U. S. trade didn't expect it to last more than a few days.

Tin prices for the week: April 9 — 93.125; April 10 — 92.875; April 11 — 92.50; April 14 — 92.50; April 15 — 92.25.*

* Estimate

new LIGHT weight LOW-HEAD AIR HOISTS

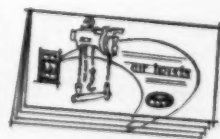


Unequalled for tough jobs, these hoists are unaffected by hot, corrosive, or wet atmospheres and are explosion and shock proof.

They are available in two capacities. The ½-ton size weighs only 39 lbs., and the 1-ton size weighs only 55 lbs. Fully-loaded lifting speeds are 40 fpm and 20 fpm respectively, and both units are available with either link or roller chain.

Ask your Ingersoll-Rand AIR-engineer to demonstrate these new "light weight leaders" in the complete line of Ingersoll-Rand air hoists from 200 lbs. to 24,000 lbs. capacity. Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

Send for free copy of new Lightweight Air Hoist Bulletin Form 5224.



Ingersoll-Rand

Tools plus AIRengineering
increase output per man

8-752

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate
("F" temper except 6061-0)

Alloy	.082	.061	.136- .249	.250- 3.
1100, 3003.....	46.6	44.3	43.6	42.7
5052.....	54.0	48.9	47.2	45.4
6061-0.....	51.4	47.0	45.2	45.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8.....	45.0-46.8	60.4-64.1
12-14.....	45.7-47.2	61.3-65.8
24-36.....	49.0-49.5	72.1-76.8
36-38.....	58.0-58.6	96.2-99.8

Screw Machine Stock—2011-T-3

Size*	3/4	3/8-5/8	1/2-1	1 1/4-1 3/4
Price.....	63.0	62.5	61.0	58.6

Roofing Sheet, Corrugated
(Per sheet, 26" wide base, 16,000 lb)

Length*→	72	96	120	144
.019 gage.....	\$1.420	\$1.563	\$2.367	\$2.839
.024 gage.....	1.774	2.366	2.957	3.849

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type↓	Gage→	.250 3.00	.250- 2.00	.188	.061	.082
AZ31B Stand, Grade.....		67.9	99.0	77.9	108.1	
AZ31B Spec.....		93.3	95.7	108.7	171.3	
Tread Plate.....		70.6	71.7			
Todding Plate.....		75.0				

Extruded Shapes

Factor→	6-8	12-14	24-26	36-38
Comm. Grade, (AZ31C).....	69.6	70.7	75.6	89.3
Spec. Grade... (AZ31B).....	84.6	85.7	90.6	104.2

Alloy Ingot

AZ31B (Die Casting).....	37.35 (delivered)
AZ31A, AZ32A, AZ31C (Sand Casting) 40.75 (Velasco, Tex.)	

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

"A" Nickel Monel	Inconel
Sheet, CR.....	126
Strip, CR.....	106
Prod. bar, HR.....	124
Angles, HR.....	107
Plates, HR.....	107
Seamless tube.....	120
Shot, blocks.....	157
	87

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper.....	48.13	48.36	48.33	48.33
Brass, 70/30.....	42.69	43.23	42.83	45.00
Brass, Low.....	44.90	45.44	44.84	47.71
Brass, R L.....	45.67	46.21	45.61	48.48
Brass, Naval.....	47.07	47.38	47.38	50.48
Monel Metal.....	45.19	45.00	45.00	45.00
Comm. Br.....	46.98	47.52	46.92	49.84
Mang. Br.....	50.81	50.81	44.91	44.91
Phos. Br. 5%.....	67.17	67.17	67.67	67.67

Free Cutting Brass Rod..... 31.03

TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, \$9.50-
\$10.60; alloy, \$14.75; Plate, HR, commercially
pure, \$8.00-\$8.75; alloy, \$10.75. Wire, rolled
and/or drawn, commercially pure, \$7.50-\$8.00;
alloy, \$10.00. Bar, HR or forged, commercially
pure, \$6.15-\$6.40; alloy, \$8.15-\$8.35; billets,
HR, commercially pure, \$6.00-\$6.25; alloy,
\$6.00-\$6.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex. 29.50
Beryllium aluminum 5% Be, Dollar
per lb contained Be.....\$74.75
Beryllium copper, per lb contained Be.....\$43.00
Beryllium 97% lump or beads,
Cleveland, Reading.....\$71.50
Bismuth, ton lots.....\$ 2.25
Cadmium, del'd.....\$ 1.55
Calcium, 99.9% small lots.....\$ 4.55
Chromium, 99.8% metallic basis...\$ 1.31
Cobalt, 97-99% (per lb).....\$2.00 to \$2.07
Germanium, per gm, f.o.b. Miami,
Okla., refined.....\$39.50 to \$50.00
Gold, U. S. Treas., per troy oz.....\$35.00
Iridium, 99.9%, dollars per troy oz.....\$ 2.25
Iridium, dollars per troy oz.....\$60 to \$90
Lithium, 98%.....\$11.00 to \$14.00
Magnesium, sticks, 100 to 500 lb.....\$9.00
Mercury, dollars per 76-lb flask,
f.o.b. New York.....\$233 to \$237
Nickel oxide sinter at Copper
Cliff, Ont., contained nickel.....71.25
Palladium, dollars per troy oz.....\$19 to \$21
Platinum, dollars per troy oz.....\$72 to \$75
Rhodium.....\$120.00 to \$125.00
Silver ingots (6 per troy oz.).....\$8.625
Thorium, per kg.....\$43.00
Vanadium.....\$ 3.45
Zirconium sponge.....\$ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot	
No. 115.....	25.25
No. 120.....	24.25
No. 123.....	23.50
80-10-10 ingot	
No. 305.....	29.25
No. 315.....	27.25
88-10-2 ingot	
No. 210.....	36.25
No. 215.....	32.00
No. 245.....	28.75
Yellow ingot	
No. 405.....	21.25
Manganese bronze	
No. 421.....	23.00

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.80 copper max.....	24.00-24.25
0.60 copper max.....	23.75-24.00
Piston alloys (No. 122 type).....	23.25-24.25
No. 12 alum. (No. 2 grade).....	21.00-21.75
10% alloy.....	21.50-22.25
19% alloy.....	24.00-25.50
13 alloy (0.60 copper max.).....	23.75-24.00
AXS-679 (1 pct zinc).....	21.25-22.25

Steel deoxidizing aluminum notch bar
granulated or shot

Grade 1—95-97 1/2%.....	22.00-23.50
Grade 2—92-95%.....	21.00-21.75
Grade 3—90-92%.....	20.00-20.75
Grade 4—85-90%.....	17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for
shipments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	21	20 1/2
Yellow brass.....	16 1/2	14 1/2
Red brass.....	18 1/2	17 1/2
Comm. bronze.....	19 1/2	18 1/2
Mang. bronze.....	14 1/2	14 1/2
Yellow brass rod ends.....	15 1/2	

Customs Smelters Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire.....	19 1/2
No. 2 copper wire.....	18
Light copper.....	15 1/2
*Refinery brass.....	17 1/2
Copper bearing material.....	16 1/2
**Dry copper content.....	

Ingot Makers Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire.....	19 1/2
No. 2 copper wire.....	18
Light copper.....	15 1/2
No. 1 composition.....	18 1/2
No. 1 comp. turnings.....	18
Hvy. yellow brass solids.....	13
Brass pipe.....	16
Radiators.....	14 1/2

	Aluminum
Mixed old cast.....	12 — 13
Mixed new chips.....	14 1/2 — 15 1/2
Mixed turnings, dry.....	12 1/2 — 13 1/2

Dealers' Scrap

(Dealers' buying price f.o.b. New York
in cents per pound)

Copper and Brass

No. 1 copper wire.....	17 1/2 — 18
No. 2 copper wire.....	15 1/2 — 16
Light copper.....	13 1/2 — 14
Auto radiators (unswaged).....	11 — 11 1/2
No. 1 composition.....	14 1/2 — 15
No. 1 composition turnings.....	13 1/2 — 14
Cocks and faucets.....	12 — 12 1/2
Clean heavy yellow brass.....	10 — 10 1/2
Brass pipe.....	12 — 12 1/2
New soft brass clippings.....	13 — 13 1/2
No. 1 brass rod turnings.....	10 1/2 — 11

Aluminum

Alum. pistons and struts.....	5 — 5 1/2
Aluminum crankcases.....	9 1/2 — 10
1100 (2S) aluminum clippings.....	12 1/2 — 13
Old sheet and utensils.....	9 1/2 — 10
Borings and turnings.....	6 — 6 1/2
Industrial castings.....	9 1/2 — 10
2024 (24S) clippings.....	11 — 11 1/2

Zinc

New zinc clippings.....	4 — 4 1/2
Old zinc.....	3 — 3 1/2
Zinc routings.....	1 1/2 — 2
Old die cast scrap.....	1 1/2 — 1 3/4

Nickel and Monel

Pure nickel clippings.....	42-45
Clean nickel turnings.....	37-40
Nickel anodes.....	42-45
Nickel rod ends.....	42-45
New Monel clippings.....	28-29
Clean Monel turnings.....	20-23
Old sheet Monel.....	25-26
Nickel silver clippings, mixed.....	18
Nickel silver turnings, mixed.....	15

Lead

Soft scrap lead.....	7 1/2 — 8
Battery plates (dry).....	2 1/2 — 3
Batteries, acid free.....	1 1/2 — 2

Miscellaneous

Block tin.....	75 — 76
No. 1 pewter.....	59 — 60
Auto babbitt.....	39 — 40
Mixed common babbitt.....	11 — 11 1/2
Solder joints.....	14 1/2 — 15
Siphon tops.....	12 — 12 1/2
Small foundry type.....	12 — 12 1/2
Monotype.....	11 — 11 1/2
Lino. and stereotype.....	11 — 11 1/2
Electrotype.....	10 — 10 1/2
Hand picked type shells.....	7 — 7 1/2
Lino. and stereo. dross.....	3 — 3 1/2
Electro dross.....	2 1/2 — 2 3/4

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled
EAST	Bethlehem, Pa.			\$114.00 B3		5.325 B3	7.00 B3	5.325 B3						
	Buffalo, N. Y.	\$77.50 R3, B3	\$96.00 R3, B3	\$114.00 R3, B3	6.225 B3	5.325 B3	7.00 B3	5.325 B3	4.925 R3, B3	7.15 S10	7.325 B3			
	Phila., Pa.									7.70 P15				
	Harrison, N. J.													15.05 C11
	Conschoheocken, Pa.		\$101.00 A2	\$121.00 A2					4.975 A2	7.20 A2	7.325 A2			
	New Bedford, Mass.									7.60 R6				
	Johntown, Pa.	\$77.50 B3	\$96.00 B3	\$114.00 B3		5.325 B3	7.00 B3							
	Boston, Mass.									7.70 T8				15.40 T8
	New Haven, Conn.									7.60 D1				
	Baltimore, Md.									7.15 T8				
	Phoenixville, Pa.					5.325 P2		5.325 P2						
	Sparrows Pt., Md.								4.925 B3		7.325 B3			
MIDDLE WEST	Bridgeport, Wallingford, Conn.			\$114.00 N8						7.60 W1				
	Pawtucket, R. I.									7.70 N7				15.40 N7
	Worcester, Mass.									7.70 A5				15.20 T8
	Alton, Ill.								5.125 L1					
	Ashland, Ky.								4.925 A7					
	Centon-Massillon, Dover, Ohio		\$96.00 R3	\$114.00 R3, T5						7.15 G4		10.45 G4		14.85 C11
	Chicago, Ill.	\$77.50 U1, R3	\$96.00 U1, R3,W8	\$114.00 U1, R3,W8	6.225 U1	5.275 U1, W8,P13	7.75 U1,Y1 W8	5.275 U1	4.925 W8, N4,A1	7.25 A1,T8 M8			8.10 W8, S9,J3	15.05 A1, S9,G4
	Franklin Park, Ill.													
	Evanston, Ill.													
	Cleveland, Ohio									7.15 A5,J3		10.45 A5	8.10 J3	
	Detroit, Mich.			\$114.00 R5					5.025 G3, M2	7.25 M2,D1, D2,G3,P11	7.425 G3	10.60 D2 10.55 G3	8.10 G3	
	Anderson, Ind.									7.15 G4				
WEST	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$77.50 U1	\$96.00 U1	\$114.00 U1, Y1		5.275 U1, J3	7.75 U1, J3	5.275 J3	4.925 U1, J3,Y1	7.15 Y1	7.325 U1, J3,Y1	10.60 Y1	8.10 U1, Y1	
	Sterling, Ill.	\$77.50 N4				5.275 N4			5.025 N4					
	Indianapolis, Ind.									7.30 J3				15.20 J3
	Newport, Ky.												8.10 A9	
	Middletown, Ohio													
	Niles, Warren, Ohio		\$96.00 S1, C10	\$114.00 C10,S1					4.925 R3, S1	7.15 R3,T4 S1	7.325 R3, S1	10.50 S1 10.45 R3	8.10 S1	15.05 S1
	Sharon, Pa.													
	Owensboro, Ky.	\$77.50 G5	\$96.00 G5	\$114.00 G5										
	Pittsburgh, Pa.	\$77.50 U1, P6	\$96.00 U1, C11,P6	\$114.00 U1, C11,B7	6.225 U1	5.275 U1, J3	7.75 U1, J3	5.275 U1	4.925 P6	7.15 J3,B4, S1			8.10 S9	15.05 S9
	Midland, Pa.													
	Butler, Pa.													
Aliquippa, Pa.														
SOUTH	Weirton, Wheeling, Follansbee, W. Va.				6.225 W3	5.275 W3		5.275 W3	4.925 W3	7.15 W3,F3	7.325 W3	10.50 W3		
	Youngstown, Ohio	\$77.50 R3	\$96.00 Y1, C10	\$114.00 Y1			7.75 Y1			7.15 Y1,J3	7.325 U1, Y1	10.65 Y1	8.10 U1, Y1	15.05 J3 10.65 Y1
	Fontana, Cal.	\$88.00 K1	\$105.50 K1	\$135.00 K1		6.075 K1	8.55 K1	6.225 K1	5.675 K1	9.00 K1				
	Geneva, Utah		\$96.00 C7			5.275 C7	7.75 C7							
	Kansas City, Mo.					5.375 S2	7.85 S2						8.35 S2	
	Los Angeles, Torrance, Cal.		\$105.50 B2	\$134.00 B2		5.975 C7, B2	8.45 B2		5.675 C7, B2	9.05 J3 9.20 C1			9.30 B2	17.25 J3
	Minnequa, Colo.					5.575 C6			6.025 C6	9.10 K1				
	Portland, Ore.					6.025 D2								
	San Francisco, Niles, Pittsburg, Cal.		\$105.50 B2			5.925 B2	8.40 B2		5.675 C7, B2					
	Seattle, Wash.		\$109.50 B2			6.025 B2	8.50 B2		5.925 B2					
	Atlanta, Ga.					5.475 A8			4.925 A8					
	Fairfield, Ala. City, Birmingham, Ala.	\$77.50 T2	\$96.00 T2			5.275 T2, R3,C16	7.75 T2		4.925 T2, R3,C16		7.325 T2			
Houston, Lone Star, Texas		\$101.00 S2	\$119.00 S2		5.375 S2	7.85 S2						8.35 S2		

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

SHEETS

WIRE
ROD

TINPLATE†

BLACK
PLATEHot-rolled
18 ga.
& hvyr.Cold-
rolled

Galvanized

Enamel-
ingLong
TernéHi Str.
Low Alloy
H.R.Hi Str.
Low Alloy
C.R.Hi Str.
Low Alloy
Galv.Coke*
1.25-lb.
base boxElectro*
0.25-lb.
base boxHolloware
Enameling
29 ga.

EAST

Bethlehem, Pa.

Buffalo, N. Y.

Claymont, Del.

Coatesville, Pa.

Conshohocken, Pa.

Harrisburg, Pa.

Hartford, Conn.

Johnstown, Pa.

Fairless, Pa.

New Haven, Conn.

Phoenixville, Pa.

Sparrows Pt., Md.

Worcester, Mass.

Trenton, N. J.

Alton, Ill.

Ashland, Ky.

Canton-Massillon,
Dover, Ohio

Chicago, Joliet, Ill.

Sterling, Ill.

Cleveland, Ohio

Detroit, Mich.

Newport, Ky.

Gary, Ind. Harbor,
Indiana

Granite City, Ill.

Kokomo, Ind.

Mansfield, Ohio

Middletown, Ohio

Niles, Warren, Ohio
Sharon, Pa.Pittsburgh, Pa.
Midland, Pa.
Butler, Pa.
Donora, Pa.
Aliquippa, Pa.

Portsmouth, Ohio

Weirton, Wheeling,
Fellansbee, W. Va.

Youngstown, Ohio

Fontana, Cal.

Geneva, Utah

Kansas City, Mo.

Los Angeles,
Torrance, Cal.

Minnequa, Colo.

San Francisco, Niles,
Pittsburgh, Cal.

Seattle, Wash.

Atlanta, Ga.

Fairfield, Ala.
Alabama City, Ala.

Houston, Tex.

MIDDLE WEST

WEST

SOUTH

† Special coated mig-
terne deduct 50¢ from
1.25-lb. coke base box
price. Can-making quality
blackplate 55 to 120 lb.
deduct \$2.20 from 1.25 lb.
coke base box.
* COKE: 1.50-lb.
add 25¢.
ELECTRO: 0.50-lb. add
25¢; 0.75-lb. add 65¢;
1.00-lb. add \$1.00. Differ-
ential 1.00 lb./0.25 lb.
add 65¢.

(Effective April 14, 1958)

THE IRON AGE, April 17, 1958

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL
PRICES

BARS

PLATES

WIRE

	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs. Bright
EAST	Bothlehem, Pa.			6.475 B3	8.775 B3	7.925 B3					
	Buffalo, N. Y.	5.425 R3,B3	5.425 R3,B3	7.35 B5	6.475 B3,R3	8.775 B3,B5	7.925 B3	5.10 B3		7.20 B3	7.65 W6
	Claymont, Del.							5.10 C4		7.20 C4	7.625 C4
	Coatesville, Pa.							5.10 L4		7.20 L4	7.925 L4
	Conshehochon, Pa.							5.20 A2	6.175 A2	7.20 A2	7.625 A2
	Harrisburg, Pa.							5.10 P2	6.275 P2		
	Milton, Pa.	5.575 M7	5.575 M7								
	Hartford, Conn.			7.80 R3		9.075 R3	7.925 B3				
	Johnstown, Pa.	5.425 B3	5.425 B3		6.475 B3			5.10 B3		7.20 B3	7.625 B3
	Fairless, Pa.	5.575 U1	5.575 U1		6.625 U1						
	Newark, N. J.			7.75 W10		8.95 W10					
	Camden, N. J.			7.75 P10		8.95 P10					
	Bridgeport, Conn.			7.85 W10	6.55 N8	8.925 N8					
	Putnam, Conn.			7.80 J3							
MIDDLE WEST	Williamston, Conn.										
	Sparrows Pt., Md.		5.425 B3					5.10 B3		7.20 B3	7.625 B3
	Palmer, Worcester, Mass.			7.85 B5,C14		9.075 A5,B5					7.95 A5, W5
	Readville, Mass.										
	Mansfield, Mass.										
	Spring City, Pa.			7.75 K4		8.95 K4					
	Alton, Ill.	5.625 L1									7.85 L1
	Ashland, Newport, Ky.							5.10 A7,A1		7.20 A1	
	Canton, Massillon, Ohio			7.30 R3,R2	6.475 R3,T5	8.775 R3,R2,T5					
	Chicago, Joliet, Waukegan, Ill.	5.425 U1,R3,W8,N4,P13	5.425 U1,R3,N4,P13	7.30 A5,W10,W8,B5,L2,N9	6.475 U1,R3,W8	8.775 A5,W10,W8,L2,N8,B5	7.925 U1,W8	5.10 U1,A1,W8,I3	6.175 U1	7.20 U1,W8	7.625 U1,W8
	Harvey, Ill.										7.65 A5,R3,W8,N4,K2,W7
	Cleveland, Ohio	5.425 R3	5.425 R3	7.30 A5,C13		8.775 A5,C13,C18	7.925 R3	5.20 R3,J3	6.175 J3		7.625 R3,J3
	Elyria, Ohio			C18							7.65 A5,C13
	Detroit, Mich.	5.525 G3	5.775 G3	7.55 P3	6.475 R5	8.775 R5	8.025 G3	5.20 G3		7.35 G3	
				7.50 P8,B5	6.575 G3	8.975 B5,P3,P8					
WEST	Duluth, Minn.										7.65 A5
	Gary, Ind. Harbor, Crawfordville, Hammond, Ind.	5.425 U1,I3,Y1	5.425 U1,I3,Y1	7.30 R3,J3	6.475 U1,I3,Y1	8.775 R3,M4	7.925 U1,Y1	5.10 U1,I3,Y1	6.175 J3,I3	7.20 U1,Y1	7.625 U1,Y1,I3
	Granite City, Ill.							5.30 G2			
	Kokomo, Ind.		5.525 C9								7.75 C9
	Sterling, Ill.	5.525 N4	5.525 N4					5.10 N4			7.75 K2
	Niles, Warren, Ohio			7.30 C10	6.475 C10,S1	8.775 C10	7.925 S1	5.10 R3,S1		7.20 S1	7.625 R3,S1
	Sharon, Pa.										
	Owenboro, Ky.	5.425 G5			6.475 G5						
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 U1,J3	5.425 U1,J3	7.30 A5,B4,R3,J3,C11,W10,S9,C8	6.475 U1,J3,C11,B7	8.775 A5,W10,R3,SR,C11,C8	7.925 U1,J3	5.10 U1,J3	6.175 U1	7.20 U1,J3,B7	7.625 U1,J3,B7
											7.65 A5,J3,P6
	Portsmouth, Ohio										7.65 P7
	Weirton, Wheeling, Follinsbee, W. Va.							5.10 W5			
	Youngstown, Ohio	5.425 U1,R3,Y1	5.425 U1,R3,Y1	7.30 A5,Y1,F2	6.475 U1,Y1	8.775 Y1,F2	7.925 U1,Y1	5.10 U1,R3,Y1		7.20 Y1	7.625 U1,R3,Y1
SOUTH	Emeryville, Cal.	6.175 J5	6.175 J5								
	Fountain, Cal.	6.125 K1	6.125 K1		7.525 K1		8.625 K1	5.90 K1		8.00 K1	8.425 K1
	Geneva, Utah							5.10 C7		7.625 C7	
	Kansas City, Mo.	5.675 S2	5.675 S2		6.725 S2		8.175 S2				7.90 S2
	Los Angeles, Torrance, Cal.	6.125 C7,B2	6.125 C7,B2	8.75 R3,P14	7.525 B2	10.75 P14	8.625 B2				8.00 B2
	Minneapolis, Colo.	5.875 C6	5.875 C6					5.95 C6			7.90 C6
	Portland, Ore.	6.175 O2	6.175 O2								
	San Francisco, Niles, Pittsburg, Cal.	6.125 C7	6.125 C7				8.675 B2				8.00 C7,C6
		6.175 B2	6.175 B2								
	Seattle Wash.	6.175 B2,N6	6.175 B2				8.675 B2	6.00 B2		8.10 B2	8.525 B2
SOUTH	Atlanta, Ga.	5.625 A8	5.625 A8								7.65 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.425 T2,R3,C16	5.425 T2,R3,C16	7.90 C16			7.925 T2	5.10 T2,R3			7.65 T2,R3
	Houston, Ft. Worth, Lone Star, Tex.	5.675 S2	5.675 S2		6.725 S2		8.175 S2	5.20 S2		7.30 S2	7.725 S2
								5.20 L3			7.90 S2

(Effective April 14, 1958)

† Merchant Quality—Special Quality 35¢ higher

STEEL PRICES

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
- A2 Alan Wood Steel Co., Conshohocken, Pa.
- A3 Allegheny Ludlum Steel Corp., Pittsburgh
- A4 American Cladmetals Co., Carnegie, Pa.
- A5 American Steel & Wire Div., Cleveland
- A6 Angel Nail & Chaplet Co., Cleveland
- A7 Armco Steel Corp., Middletown, Ohio
- A8 Atlantic Steel Co., Atlanta, Ga.
- A9 Acme-Newport Steel Co., Newport, Ky.
- B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Pacific Coast Steel Corp., San Francisco
- B3 Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- B5 Bliss & Laughlin, Inc., Harvey, Ill.
- B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
- B7 A. M. Byers, Pittsburgh
- B8 Braburn Alloy Steel Corp., Braburn, Pa.
- C1 Calatrop Steel Corp., Los Angeles
- C2 Carpenter Steel Co., Reading, Pa.
- C3 Central Iron & Steel Co., Harrisburg, Pa.
- C4 Claymont Products Dept., Claymont, Del.
- C6 Colorado Fuel & Iron Corp., Denver
- C7 Columbia Geneva Steel Div., San Francisco
- C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Pittsburgh, Pa.
- C11 Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland
- C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connors Steel Div., Birmingham
- C17 Chester Blast Furnace, Inc., Chester, Pa.
- C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- D1 Detroit Steel Corp., Detroit
- D2 Dearborn Div., Sharon Steel Corp.
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- E1 Eastern Stainless Steel Corp., Baltimore
- E2 Empire Steel Co., Mansfield, O.
- F1 Firth Sterling, Inc., McKeesport, Pa.
- F2 Fitzsimons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G2 Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- G4 Greer Steel Co., Dover, O.
- G5 Green River Steel Corp., Owenboro, Ky.
- H1 Hanna Furnace Corp., Detroit
- I2 Ingersoll Steel Div., Chicago
- I3 Inland Steel Co., Chicago
- I4 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O.
- J2 Jenap Steel Corp., Washington, Pa.
- J3 Jones & Laughlin Steel Corp., Pittsburgh
- J4 Joslyn Mfg. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.
- K1 Kaiser Steel Corp., Fontana, Cal.
- K2 Keystone Steel & Wire Co., Peoria
- K3 Koppers Co., Granite City, Ill.
- K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Lackde Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- M1 Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mfg. Co., Sharon, Pa.
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- M8 Mill Strip Products Co., Evanston, Ill.
- N1 National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh
- N3 Niles Rolling Mill Div., Niles, O.
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- N6 Northwest Steel Rolling Mills, Seattle
- N7 Newman Crosby Steel Co., Pawtucket, R. I.
- N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
- N9 Nelson Steel & Wire Co.
- O1 Oliver Iron & Steel Co., Pittsburgh
- O2 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P8 Plymouth Steel Co., Detroit
- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Joliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- R1 Reeves Steel & Mfg. Co., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Roebbing Sons Co., John A., Trenton, N. J.
- R5 J. & L. Steel Co., Stainless Div.
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.
- S1 Sharon Steel Corp., Sharon, Pa.
- S2 Sheffield Steel Div., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S4 Simonds Saw and Steel Co., Fitchburg, Mass.
- S5 Sweet's Steel Co., Williamsport, Pa.
- S6 Standard Forging Corp., Chicago
- S7 Stanley Works, New Britain, Conn.
- S8 Superior Drawn Steel Co., Monaca, Pa.
- S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
- S10 Seneca Steel Service, Buffalo
- S11 Southern Electric Steel Co., Birmingham
- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
- T2 Tennessee Coal & Iron Div., Fairfield
- T3 Tennessee Products & Chem. Corp., Nashville
- T4 Thomas Strip Div., Warren, O.
- T7 Timken Steel & Tube Div., Canton, O.
- T8 Texas Steel Co., Fort Worth
- Th Thompson Wire Co., Boston
- U1 United States Steel Corp., Pittsburgh
- U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- U3 Ulbrich Stainless Steels, Wallingford, Conn.
- U4 U. S. Pipe & Foundry Co., Birmingham
- W1 Wallingford Steel Co., Wallingford, Conn.
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire-Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Div., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh
- W12 Wallace Barnes Steel Div., Bristol, Conn.
- Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pt) l.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD												SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.		4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. B3...	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50						
Youngstown R3...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50						
Fontana K1...	+8.25	+23.5	+5.25	+10.5	+1.75	+1.50	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00						
Pittsburgh J3...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0
Alton, Ill. L1...	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50						
Sharon M3...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50						
Fairless N2...	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50						
Pittsburgh N1...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0
Wheeling W3...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50						
Wheatland W4...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50						
Youngstown Y1...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0
Indiana Harbor Y1...	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.25	+1.00						
Lorain N2...	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	+0.25	15.25	+0.75	16.75	+0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0
EXTRA STRONG PLAIN ENDS																				
Sparrows Pt. B3...	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50						
Youngstown R3...	8.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50						
Fairless N2...	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50						
Fontana K1...	+3.75		8.25		3.25		3.75		4.25		4.75		5.25							
Pittsburgh J3...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50
Alton, Ill. L1...	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50						
Sharon M3...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50						
Pittsburgh N1...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50
Wheeling W3...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50						
Wheatland W4...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50						
Youngstown Y1...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50
Indiana Harbor Y1...	6.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50						
Lorain N2...	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 3 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 3/8, 1/2 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective April 14, 1958)

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
1/2" and smaller x 6" and shorter	49	54	56	57
5/8" thru 1" x longer than 6"	35	40	43	45
Roll thread carriage bolts 1/2" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44 1/2	47	48 1/2
Flow bolts, 1/2" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
3/4 in. or smaller	60 1/2
1/2 in. to 1 in. inclusive	55 1/2
1 1/4 in. to 1 1/2 in. inclusive	58 1/2
1 1/2 in. and larger	53 1/2

C. P. Hex, reg. & hvy.	
3/4 in. and smaller	60 1/2
1/2 in. to 1 1/4 in. inclusive	55 1/2
1 1/4 in. and larger	53 1/2

Hot Galv. Hex Nuts (All Types)	
3/4 in. and smaller	46 1/2

Semi-finished Hex Nuts	
3/4 in. or smaller	60 1/2
1/2 in. to 1 1/4 in. inclusive	55 1/2
1 1/4 in. and larger	53 1/2
(Add 25 pct for broken case or keg quantities)	

Finished	
3/4 in. and smaller	63

Rivets	Base per 100 lb
1/2 in. and larger	\$12.25
7/16 in. and smaller	Pot. Off List 19

Cap Screws	Discount (Packages)	Full Finished H. C. Heat Treat
New std. hex head, packaged		
5/8" diam. and smaller x 6" and shorter	40	26
3/4", 7/8", and 1" diam. x 6" and shorter	22	3
5/8" diam. and smaller x longer than 6"	8	+13
3/4", 7/8", and 1" diam. x longer than 6"	+32	
C-1018 Steel Full-Finished Cartons Bulk		
1/4" through 5/8" dia. x 6" and shorter	58	49
5/8" through 1" dia. x 6" and shorter	45	33
Minimum quantity—1/4" through 5/8" diam., 15,000 pieces; 1/2" through 1" diam., 5,000 pieces; 3/4" through 1" diam., 2,000 pieces.		

Machine Screws & Stove Bolts	Discount	Mach. Stove Screws Bolts
Plain Finish		
Cartons	60	60
Bulk	Quantity	
To 3/4" diam. incl.	25,000-and over	60
5/16 to 3/4" diam. incl.	15,000-200,000	60

Machine Screws & Stove Bolt Nuts	Discount	Hex Square
In Cartons	16	19
In Bulk	Quantity	
3/4" diam. & smaller	25,000 and over	14
		16

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	135.7
Chicago	140.9
San Francisco-L. A.	148.6
Dec. 1955. value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.	

ELECTROPLATING SUPPLIES

Anodes	(Cents per lb, f.o.b. shipping point)
Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	31.25
Brass, 80-20, ball anodes, 2000 lb or more	44.00
Zinc, ball anodes, 2000 lb lots	16.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes \$1.13 per lb (approx.)	
Chemicals	(Cents per lb, f.o.b. shipping point)
Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	48.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.05
(Philadelphia price 24.50)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum	48.00
N. Y.	
Chromic acid, flake type, 10,000 lb or more	31.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh	
Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, west of Miss. River	9.5¢
Domestic sponge iron, 98+ % Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	10.5¢
Electrolytic iron, annealed, imported 99.5+ % Fe	27.5¢
domestic 99.5+ % Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+ % Fe	57.0¢
Electrolytic iron melting stock, 99.84 % pure	27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+ % Fe.	88.0¢ to \$2.85
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85 % min. Fe. 03 max. Del'd	\$5.00
Lead	21.50¢ f.o.b. plant
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	\$3.60 to \$3.95
Nickel, chemically precipitated	\$1.05
Nickel, unannealed	\$1.00
Nickel, annealed	\$1.06
Nickel, spherical, unannealed	\$1.13
280	43.50¢
Silicon	13¢ plus met. value
Solder powder	\$1.02
Stainless steel, 302	\$1.30
Stainless steel, 316	14.00¢ plus metal value
Tin	65 mesh \$3.15 (nominal)
Tungsten, 99% (65 mesh)	17.5¢ to 30.7¢
Zinc, 5000 lb & over	

Metropolitan Price, dollars per 100 lb.

City	Sheets				Strip	Plates	Shapes	Bars				Alloy Bars			
	Hot-Rolled (18 ga. & hr.)	Cold-Rolled (15 ga.)	Galvanized (10 ga.)	Electrolytic	Hot-Rolled	Standard	Standard	Hot-Rolled (merchant)	Cold-Finished	Hot-Rolled 4015	Hot-Rolled 4015	Cold-Drawn 4015	Cold-Drawn 4015	Cold-Drawn 4015	Cold-Drawn 4015
Atlanta	8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68							
Baltimore	\$1.10	8.38	9.98	9.78	8.86	8.76	9.29	9.16	11.44*	16.18	15.18	19.73	18.98		
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.60	10.57						
Boston	.10	9.48	10.54	11.55	9.32	9.82	9.73	9.33	13.00	16.38	15.38	19.93	19.18		
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.05*	16.34	15.15	19.01	18.95		
Chicago	.15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60		
Cincinnati	.15	8.49	9.65	10.25	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91		
Cleveland	.15	8.33	9.60	10.35	8.48	8.94	9.16	8.84	10.95*	15.80	14.89	19.29	18.69		
Denver	.20	9.70	11.30	12.49	9.80	9.70	9.80	9.98	10.65				17.60		
Detroit	.15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.96	18.81	18.86		
Houston		7.10	8.05		7.25	7.70	7.25	7.20	11.10	16.20	15.25	19.65	19.95		
Kansas City	.20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27		
Los Angeles	.10	8.60**	10.85	11.75	8.65	8.65	8.70	8.80	13.35*	17.05	16.10	21.05	20.35		
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*						
Milwaukee	.15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73		
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	12.86*	16.19	15.19	19.74	18.99		
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70						
Philadelphia	.10	8.10	9.80	10.82	8.79	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91		
Pittsburgh	.15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60		
Portland		10.00†	11.75‡	13.30‡	11.95‡	10.10‡	11.10‡	9.85†	11.34*	18.50	17.45	20.75	20.25		
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35		
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15		
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20		17.35	21.55	21.05		
St. Louis	.15	8.69	9.94	10.61	8.74	9.08	9.25	9.12	9.56	16.16	15.16	19.71	18.96		
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81		15.41		19.21		

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. *All sizes except 18 and 16 gage. †110¢ zinc. ‡Deduct for country delivery. *C1018—1 in. rounds. †10 ga. x 36" x 120"; ‡20 ga. x 36" x 120"; §26 ga. x 30" x 96"; ¶1 1/4" x 1" in lots of 1000 to 9999; **sheared plate 1/4" x 84" in lots of 1000 to 9999; †3" x 5.70" in lots of 1000 to 9999; †M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective April 14, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	\$1.795	T-1
18	4	1	—	5	2.50	T-4
18	4	2	—	—	1.96	T-2
1.5	4	1.5	8	—	1.155	M-1
6	4	3	6	—	1.545	M-3
6	4	2	5	—	1.30	M-2
High-carbon chromium..						.925 D-3
Oil hardened manganese						.475 O-2
Special carbon36 W-1
Extra carbon36 W-1
Regular carbon305 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

Cladding	Plate (A3, J2, L4, C4)			Sheet (J2)
	10 pct	15 pct	20 pct	
302				37.50
304	37.95	42.25	46.70	40.00
316	44.40	49.50	54.50	58.75
321	40.05	44.60	49.30	47.25
347	42.40	47.55	52.00	57.00
405	29.85	33.35	36.85	
410	29.55	33.10	36.70	
430	29.80	33.55	37.25	

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer U/I	5.525	6.50	6.975				14.75
Cleveland R3							
So. Chicago R3							
Endley T2	5.525	6.50		9.75			
Fairfield T2		6.50		9.75			6.60
Gary U/I	5.525						6.60
Huntington C16		6.50					
Ind. Harbor J3	5.525		6.975	9.75			6.60
Ind. Harbor Y1				9.75			
Johnstown B3		6.50					
Joliet U/I			6.975				14.75
Kansas City S2				9.75			
Lackawanna B3	5.525	6.50	6.975				6.60
Lebanon B3			6.975		14.50		14.75
Minneapolis C6	5.525	7.00	6.975	9.75			6.60
Pittsburgh P5							14.75
Pittsburgh J3				9.75			
Seattle B2				10.25			6.75
Steelton B3	5.525		6.975				6.60
Struthers V1				9.75			
Terrance C7							6.75
Williamstown S5		6.50					
Youngstown R3				9.75			

COKE

Furnace, beehive (f.o.b.) Net-Ton
Connellsville, Pa. \$15.00 to \$15.75
Foundry, beehive (f.o.b.) \$17.50 to \$19.00

Foundry oven coke

Buffalo, del'd	\$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered
lower Lake ports. Prices for 1958 season.
Freight changes for seller's account.

Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field		9.625	
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Special Motor		12.10	
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55		
Trans. 58	16.05	Trans. 66	20.20
Trans. 52	17.10	Trans. 80	19.20
		Trans. 73	19.70

Producing points: Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (N3); Vandergrift (U); Warren, O. (R3); Zanesville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
4	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2 1/2	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa.
(except Salina, Pa., add \$5.00) \$135.00
No. 1 Ohio 120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill. 120.00
No. 2 Ohio 103.00
Ground fire clay, net ton, bulk
(except Salina, Pa., add \$2.00) 21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. \$150.00
Childs, Hays, Pa. 155.00
Chicago District 160.00
Western Utah 175.00
California 180.00
Super Duty
Hays, Pa., Athens, Tex., Wind-
ham, Warren, O., Morrisville

Silica cement, net ton, bulk, Latrobe 160.00
Silica cement, net ton, bulk, Chi-
cago 28.50
Silica cement, net ton, bulk, Ens-
ley, Ala. 25.50
Silica cement, net ton, bulk, Mt.
Union 26.50
Silica cement, net ton, bulk, Utah
and Calif. 24.50
37.00

Chrome Brick

Per net ton
Standard chemically bonded, Balt. \$105.00
Standard chemically bonded, Curt-
iner, Calif. 115.00
Burned, Balt. 99.00

Magnesite Brick

Standard Baltimore \$131.00
Chemically bonded, Baltimore 116.00

Grain Magnesite St. % to 1/2-in. grains

Domestic, f.o.b. Baltimore in bulk \$73.00
Domestic, f.o.b. Chewelah, Wash.,
Lumina, Nev. 46.00
in bulk 52.00-54.00
in sacks

Dead Burned Dolomite

Per net ton
F.o.b. bulk, producing points in:
Pa., W. Va., Ohio \$16.75
Midwest 17.00
Missouri Valley 15.00

(Effective April 14, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Col	Col	Col	Col	Col	Col	Col	Col	Col
Standard Q Coated Nails	Wires	Wires	Wires	Wires	Wires	Wires	Wires	Wires	Wires
1/4" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbed Wire	Merch. Wire Ann'd	Merch. Wire Galv.					
Alabama City R3	173	187	212	193	8.65	9.20			
Aliquippa J3***	173	190		190	8.65	9.325			
Atlanta A8**	175	192	214	198	8.75	9.425			
Bartonville K2**	175	192	178	214	8.75	9.425**			
Buffalo W6					8.65	9.95*			
Chicago N4***	173	190	172	212	8.65	9.325			
Cleveland A6					8.65				
Cleveland A5					8.65				
Crawford M4**	175	192	214	198	8.75	9.425			
Donora, Pa. A5	173	187	212	193	8.65	9.20			
Duluth A5	173	187	212	193	8.65	9.20			
Fairfield, Ala. T2	173	187	212	193	8.65	9.20			
Galveston D4	9.101								
Houston S2	171	192	217	198	8.90	9.45			
Jacksonville M4	184-1	197	219	203	9.00	9.675			
Johnstown B3**	173	190	172	196**	8.65	9.325**			
Joliet, Ill. A5	173	187	212	193	8.65	9.20			
Kokomo C9*	175	189	214	195*	8.75	9.30*			
L. Angeles B2**					9.00	10.275			
Kansas City S2*	178	192	217	198*	8.90	9.45*			
Minneapolis C6	178	192	217	198	8.90	9.45*			
Minneapolis P6					193	8.95			
Palmer, Mass. W6					8.95	9.50*			
Pittsburg, Cal. C7	192	210		213	9.00	10.15			
Rankin, Pa. A5	173	187		193	8.65	9.20			
So. Chicago R3	173	187		193	8.65	9.20			
S. San Fran. C6			236		9.00	10.15*			
Sparrows Pt. B3**	175	192	214	198	8.75	9.425			
St. Paul, Minn. A5	173	187	212	193	8.65	9.20			
St. Paul, Minn. A5	173	187	212	193	8.65	9.20			
Worcester A5	179				8.95	9.50			
Williamstown S5					8.95	9.50			

* Zinc less than .10%.

** 11-12% zinc.

*** 10% zinc.

† Plus zinc extras.

‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. T8	9.50	10.70	12.90	15.80	18.85
Bristol, Conn. W12		10.70	12.90	16.10	19.30
Boston T8	9.50	10.70	12.90	15.80	18.85
Buffalo, N. Y. R7	8.95	10.40	12.60	15.40	18.55
Carnegie, Pa. S9	8.95	10.40	12.60	15.40	18.55
Cleveland A5	8.95	10.40	12.60	15.40	18.55
Darborn A5	8.95	10.40	12.60	15.40	18.55
Detroit D1	9.05	10.50	12.70	15.70	
Detroit D2	9.05	10.50	12.70	15.70	
Dover, O. G4	8.95	10.40	12.60	15.40	18.55
Evansville, Ind. M8	9.05	10.40	12.60	15.40	18.55
Franklin Park, Ill. T8	9.05	10.40	12.60	15.40	18.55
Harrison, N. J. C11		12.90	16.10	19.30	
Indianapolis J3	9.10	10.55	12.60	15.60	18.55
Los Angeles C1	11.15	12.60	14.70	17.80	
New Castle, Pa. B4	8.95	10.40	12.60	15.40	
New Haven, Conn. D1	9.40	10.70	12.90	15.90	
Pawtucket, R. I. N7	9.50	10.70	12.90	15.90	18.85
Pittsburgh S7	8.95	10.40	12.60	15.40	18.55
Riverside, Ill. A1	8.95	10.40	12.60	15.40	18.55
Sharon, Pa. S1	8.95	10.40	12.60	15.40	18.55
Trenton, R4		10.70	12.90	16.10	19.30
Wallingford W1	9.40	10.70	12.90	15.90	18.55
Warren, Ohio T4	8.95	10.40	12.60	15.40	18.75
Worcester, Mass. A5	9.50	10.70	12.90	15.90	18.85
Youngstown J3	8.95	10.40	12.60	15.40	18.55

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.a.b. Mill	Size		Seamless		Elec. Weld
	OD-In.	R.W. Ga.	H.R.	C.D.	
Babcock & Wilcox.....	2	13	36.34	42.56	35.25
	2½	12	48.94	57.31	47.47
	3	12	56.51	66.18	54.74
	3½	11	65.97	77.25	63.99
	4	10	87.61	102.59	85.55
National Tube.....	2	13	36.34	42.56	35.25
	2½	12	48.94	57.31	47.47
	3	12	56.51	66.18	54.74
	3½	11	65.97	77.25	63.99
	4	10	87.61	102.59	85.55
Pittsburgh Steel.....	2	13	36.34	42.56
	2½	12	48.94	57.31
	3	12	56.51	66.18
	3½	11	65.97	77.25
	4	10	87.61	102.59

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3	62.00	62.50*			
Birmingham W9	62.00	62.50*	66.50		
Birmingham U4	62.00	62.50*	66.50		
Buffalo R5	66.00	66.50	67.00	67.50	
Buffalo H1	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66.50	67.00	67.50	
Chester P2	66.50	67.00	67.50		
Chicago I4	66.00	66.50	66.50	67.00	
Cleveland A5	66.00	66.50	66.50	67.00	71.00*
Cleveland R3	66.00	66.50	66.50	67.00	
Du'alt H4	66.00	66.50	66.50	67.00	71.00
Eric I4	66.00	66.50	66.50	67.00	71.00*
Everett M6	67.50	68.00	68.50		
Fontana K1	75.00	75.50			
Geneva, Utah C7	66.00	66.50			
Granite City G2	67.90	68.40	68.90		
Hubbard Y1			68.50		
Ironton, Utah C7	66.00	66.50			
Midland C11	66.00				
Minneapolis C6	68.00	68.50	69.00		
Monessen P6	66.00				
Neville Is. P4	66.00	66.50	66.50	67.00	71.00*
N. Tonawanda T1		66.50	67.00	67.50	
Sharpsville S1	66.00		66.50	67.00	
So. Chicago R3	66.00	66.50	66.50	67.00	
So. Chicago W8	66.00		66.50	67.00	
Sveadland A2	68.00	68.50	69.00	69.50	
Toledo I4	68.00	68.50	68.50	69.00	
Troy, N. Y. R3	68.00	68.50	69.00	69.50	74.00
Youngstown Y1			66.50	67.00	

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, 32¢ per ton for 0.50 to 0.75 pct nickel, 31¢ for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), H1, \$79.25; Jackson J1, I4 (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Baseless silvery pig iron (under 10 pct phos.), \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

* Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingot, re-rolled	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	49.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	60.25	52.50	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, Md.; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., J2.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, Md.; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, J3; Sharon, Pa., S2; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (.25¢ per lb higher); New Bedford, Mass., (.25¢ per lb higher), R6; Gary, Ind., (.25¢ per lb higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, Ill., U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T3, R3; Ft. Wayne, Ind., I4; Detroit, R5; Gary, Ind.; Owensboro, Ky., G3; Bridgeport, Conn., N8.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, Pa., U1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, Ill., U1.

Plates: Brackenridge, Pa., A3; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, Ind., U1.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R5; Watervliet, A3; Pittsburgh, Chicago, Ill.; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, Ill.; Owensboro, Ky., G3; Bridgeport, Conn., N8.

(Effective April 14, 1958)

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and metals

For over 60 years, customers have called on CF&I to fill their perforated metals needs. Wissco Perforated Metals are available in:

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- ✓ Large Diameter Arbor, Oversize Bearings for Long-Life and Hairline Accuracy.
- ✓ Positive Drive—15 Speed Combinations.
- ✓ Wide Speed Range: 1100-5000 RPM for ALL Types of Work.
- ✓ More Capacity: 12-inch Saw.
- ✓ Ideal for Light Metals or Abrasive Cutting.

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 30-100% max. Si.			
0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25
4.00-4.50% C, 60-70% Cr, 1-2% Si....	28.75		
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si....	27.50		
0.025% C (Simplex)	36.75		
0.10% C, 52-57% Cr, 2.00% max Si....	37.50		
7-8½% max C, 50-55% Cr, 3-6% max Si	22.50		
7-8½% max C, 50-55% Cr, 3% max Si	25.00		

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	
0.10% max. C	\$1.31
0.50% max. C	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe....	1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (¼" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads	\$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.)			
Carloads, delivered, lump, 3-in. x down, packed.			
Price is sum of contained Cr and contained Si.			
	Cr	Si	
Carloads	27.50	14.20	
Ton lots	32.75	15.65	
Less ton lots	34.35	17.30	

Calcium-Silicon

Per lb of alloy, lump, delivered, packed.	
30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese-Silicon

Cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	24.25
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.	
Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots	18.45
Ton lots	19.35
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.			
Manganese	Silicon		
16 to 19%	3% max.	\$100.50	
19 to 21%	3% max.	102.50	
21 to 23%	3% max.	105.00	

Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	
	25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.			
	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Ton lots, packed, pallets	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area.	
Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.			
	Ton lots	Carloads, packed	
96.75% Si, 1.25% Fe....	24.20	22.90	
98% Si, 0.75% Fe....	24.95	23.65	

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.			
50% Si....	14.20	75% Si....	16.40
65% Si....	15.25	85% Si....	18.10
	90% Si....		19.50

Ferrovandium

50-55% V delivered, per pound, contained V, carloads, packed.	
Openhearth	3.20
Crucible	3.30
High speed steel (Primus)	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.			
	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.95	\$3.75
100 to 9999 lb..	2.40	3.30	4.55

(Effective April 14, 1958)

Alsiifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	10.35¢
Ton lots	11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.28
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Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots	\$4.25
Less ton lots	4.30

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta

	\$3.70
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Ferrromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo....

	\$1.68
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Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton

	\$90.00
10 tons to less carload	\$110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.35
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Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.50
Less ton lots	\$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

	\$240.00
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Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered

	\$2.15
(nominal)	

Molybde oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa.,

	\$1.41
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bags, f.o.b. Washington, Pa., Langeloth, Pa.

	\$1.38
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Manganese, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V₂O₅ per pound contained V₂O₅

	\$1.38
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Zirconium, per lb of alloy 35-40% f.o.b. freight allowed, carloads, packed

	27.25¢
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12-15% del'd lump, bulk-carloads

	9.25¢
--	-------

Boron Agents

Borax, per lb of alloy del'd f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

	\$5.50
--	--------

Boritan, f.o.b. Niagara Falls. Ton lots per pound

	45¢
Less ton lots, per pound	50¢

Corbortan, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound	14.00¢
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Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots. F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B85
14 to 19%	1.20
19% min. B	1.50

Grinal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over No. 1

	\$1.05
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No. 79

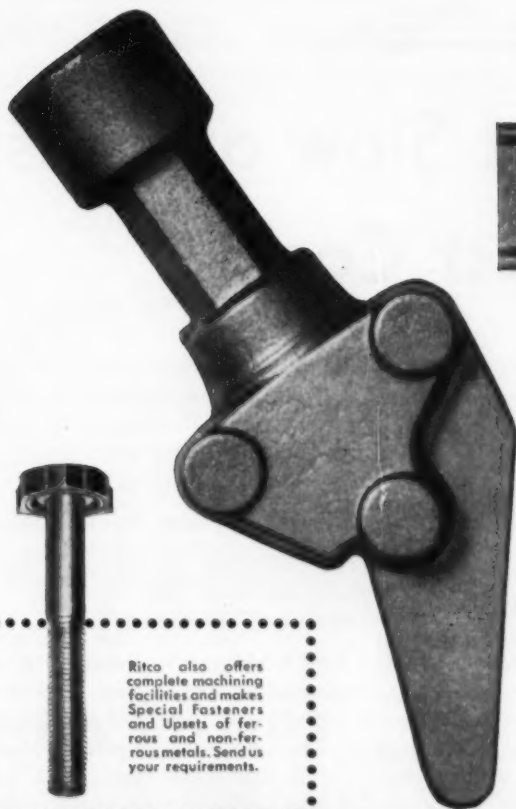
	50¢
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Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	\$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots

	2.15
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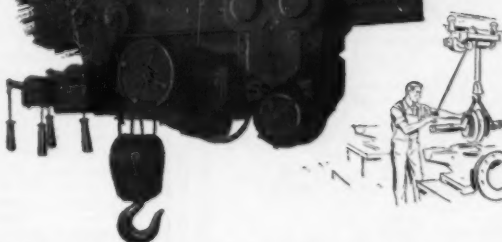
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A.C. MOTORS
3 phase—60 cycle

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Qu.	H.P.	Make	Type	Volts Speed
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1	1100	P.M.	OVZK, B.B.	4900 1800
1	800	G.E.	MT	2300 323
1	700	A.C.		2300 500
1	500	Whse.	CW	550 350
1	400	Whse.	CW	440 514
1	350	Cr. Wh.	Size 71	208/416 1765
1	350	G.E.	IM-17A	440/2200 720
1	250	G.E.	MT-424Y	4000 257
1	250	Cr. Wh.	Size 290	2300 350
1	250	Al. Ch.		550 600
1	200	G.E.	IE13 B-M	220/440 1760
1	200	Cr. Wh.	20QIB	440 505
1	200	G.E.	IM	440 435
3	200	G.E.	I-17AM	2200 435
1	200	G.E.	IM	2200 580
1	150 (unused)	Whse.	CW	2300 435
1	125	A.C.		118 865
1	125	Al. Ch.		440 720
1	100	G.E.	IM-10	2200 435
1	100	G.E.	IM	440 600
4	100	A.C.	ANT	440 695

SQUIRREL CAGE				
Qu.	H.P.	Make	Type	Volts RPM
1	800	G.E.	KT-573	2200 1180
1	650	G.E.	FT-559BY	440 3570
3	500	Whse.	CS-1216	2900 500
2	450	Whse.	CS-1420	2300/4150 354
1	400	G.E.	IK	2200 500
1	300	Elliott	SC-BB DP	440 1770
1	300	G.E.	KT 559A	2300 1775
1	200	G.E.	IK 17	440 580
2	200	G.E.	KT-557	440 1800
1	150/75	G.E.	IK	440 900/450
1	150	Whse.	CS8568	440 880
1	150	Whse.	CS	440 580

SYNCHRONOUS				
Qu.	H.P.	Make	Type	Volts RPM
1	7000	G.E.	ATT	2200/6600 600
1	4350	C.W.	3501SL4000/6600/13800	514
1	3500	G.E.	TS	4600/2300 360
1	2850	Whse.	Sp.f	2300/4600 514
1	2800	Whse.	Sp.f	2300 720
1	2000	Whse.	CS	2300 102
2	1750	G.E.	ATT	2300 3600
1	735	G.E.	ATT	2200/12000 600
1	450	Whse.		2200 128.5
1	325	G.E.	ATT	440 1800
1	225	G.E.	ATT	440 1800
1	100	G.E.	TS-7556	220/440 900

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"ANYTHING containing IRON or STEEL"

THE CLEARING HOUSE

Market Slow on Most of West Coast

Used machinery business shows some pickup in Southern California area.

But there's limited activity in northern part of state, and even less at Seattle.

■ Used machinery dealers in southern California feel things are looking up. However, northern California and Seattle dealers aren't too sure.

Around the Los Angeles industrial area there's more talk of new missile money breaking loose. Many dealers feel a spell of warmer, drier weather will mean the kickoff for big construction projects.

What's Moving—Dealers, eager to get good business rolling and sell equipment, are shaving prices. Inquiries have improved.

Large punch presses, engine lathes with 20 in. to 24 in. swing, shears, and brakes are moving briskly. In fact, dealers find brakes hard to come by. They're looking for units 10 gage and up to handle stainless steel. Some dealers are even scouting Midwestern and Eastern markets for a supply.

Shopping in the North—Northern California dealers say everything is moving slowly. But morale isn't too bad. Most people feel sales now are at rock bottom and the only way they can turn is up.

Dealers report a definite stepup in the number of inquiries. Everyone seems to be shopping around.

Big purchasers, like Lockheed and Aerojet, are in the market for some equipment now. But they're filling their needs for the present from government surplus. When this pool of equipment empties, some

dealers hope orders will then spill over to private machinery suppliers.

Because everything is so slow, dealers insist it's impossible to pick out the best movers.

Improvement Looked For—

Northern California dealers hope the rest of the year will be better than the first quarter. But, bad as it was, it still topped the final quarter of 1957. No great improvement is expected in the second and third quarters of 1958. The last quarter is regarded more hopefully. Meanwhile dealers feel business will continue to slide along near the current low level.

Caution at Seattle—There are no shortages of machines in northern California. Only press brakes and large shears, never abundant there, are brought in from the East. But now they come in only on order, and not many at that.

The word from Seattle is caution. Caution in buying; caution in taking on inventories. There's not much of a used machinery market at present.

Conflicting reports on the Seattle area's economic future have clouded the picture. Metalworking firms that might now be replacing wornout equipment are holding off.

Coming Auction

Toolroom and production machinery will be auctioned at R. Steck Co., 4th Ave., Mt. Vernon, N. Y. on April 24.

Equipment offered for sale will include a Pratt & Whitney jig borer, five milling machines, including a 4H Kearney & Trecker; lathes, drilling equipment, and a tool crib.

CONSIDER GOOD USED EQUIPMENT FIRST

ANGLE BENDING ROLL
3 x 3 x 1/2" Buffalo No. 1 Angle Bending Roll

WALER
Model #122-PX-00 Logemann, Baling Chamber 60 x 14 x 18"

BENDER & STRAIGHTENER
Pelt Type JH All Steel Bender & Straightener for Beams, Channels, Angles, Tees—Angles Equal & Tees 8 x 8 x 1 1/2"

BENDING ROLLS
10' x 1/2" Bertsch Initial Type
10' x 1/2" King Pyramid Type
12' x 5/16" Bertsch Initial Type
18' x 1" Niles Pyramid Type

BRAKE—PRESS TYPE
10' x 1/2" & 12' x 1/2" Hydraulic—NEW

CRANES—OVERHEAD ELECTRIC TRAVELING
3 ton P&H 56' Span 230/3/60
5 ton Shepard Niles 70' Span 230 Volt D.C.
8 ton P&H 55' Span 230/3/60
10 ton P&H 48' Span 230 Volt D.C.
10 ton P&H 52' Span 230 Volt D.C.
19 ton Shaw 125' Span 230 Volt D.C.
15 ton Shepard Niles 54' Span 230 Volt D.C.
20 ton Shepard Niles 88' Span 230 Volt D.C.
20 ton P&H 180' Span 230 Volt D.C.
120 ton Shepard Niles 77' Span 220/3/60

DRAW BENCH
10,000# Aetna Standard Single Draw 44 Ft. Length of Draw

FLANGING MACHINE
1/2" McCabe Pneumatic Flanging Machine

FORGING MACHINES
1" to 5" Acme, Ajax, National

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15 ton Heroult Top Charge, 12' Shell

HAMMERS—BROAD DROP—STEAM DROP—STEAM FORGING
800 lb. to 12,000 lb. incl.

LEVELERS—ROLLER
37' Torrington, 19 Rolls 1 1/2" dia.
44' Newbold, 9 Rolls 1" dia.
60' Aetna Standard, 17 Rolls 4 1/2" dia.

PLATE DUPLICATOR
No. 12 Thomas Single End, Punch Capacity 150 tons
Table Area for handling 5' x 16' Plates

PRESSES—HYDRAULIC
500 ton Watson Stillman 4 Col. Piercing Press
600 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes, 36" Stroke, 48 x 45" Bst. Coils.
1500 ton Bilas 15" Stroke, Bed 40" x 48"
1500 ton Mesta Steam Hydr. Forging Press
4500 Baldwin-Lima-Hamilton Hydr. Forging Press

PRESSES—STRAIGHT SIDE
180 ton Hamilton #847, 12" Str. 35 1/2" Bst. Ups.
200 ton Clearing #1209-42, Stroke 30", Bed 44"x38"
250 ton Bilas 31 1/2" Str. Bst. 30"x38"

PUNCH & SHEAR COMBINATIONS
Cleveland Style C. Arch Jaw, Capy. 1/2" x 1/2"
Cleveland Style EF, Arch Jaw, Capy. 1 1/2" x 1"

TORRINGTON FLAT WIRE MILL LINE
Two Strand Two High 6" x 5", Comp. with Acc.

ROLLING MILLS
6" x 1" Three Strand Wire, Rolling Mill Complete with Pay Off & Reel
8" x 10" Single Stand Two High
10" x 14" Single Stand Two High
10" x 10" Single Stand Two High
12" x 12" Single Stand Two High
12" x 10" Single Stand Two High

16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLLS—FORMING
6 Strand Teder M-1 1/2"
18 Strand Custom Built, 2 1/2" Shaft, will take 30" wide
14 Strand Custom Built, 1 1/2" Shaft x 14 3/16"

ROLLS—PLATE STRAIGHTENING
108" Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ALLIGATOR
No. 4 Mesta RH LK, Capacity 2" x 12"

SHEAR LINES
30' x 600 Gs. Halden Shear Line
42" Bilas Up-Out Shear, Capacity .125" Max. With Hump & Run-out Tables

SHEARS—SQUARING
10' x 1/2" Bertsch
14 x 3/16" Cincinnati #1814

SHEAR—ANGLE
6 x 6 x 1/2" Hillis & Jones

SLITTERS
30" Haffner, 4" Dia. Arbor—New 1953
30" Vean Slitting Line
48" Vean Slitting Line

STRAIGHTENERS
24" Halden Straightening & Cutting Machine
Torrington 12-Roll Capy. 1 1/2" Sq. Bst.
No. 6 Medart 2 Roll, Capacity 1/2"-1 1/2" Bars
No. 3 Medart 5 Roll, Capacity to 4 1/2" Tubing

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18" Dia Length Hydraulic Feed, LATE

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Type B Morgan 4-Block, Capy. #5 Rod down
No. 2 Vaughn 12-Die Continuous, Capy. #14 to #27

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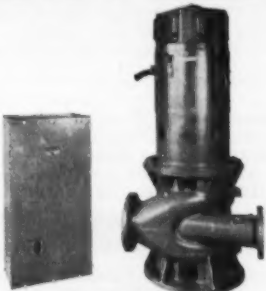
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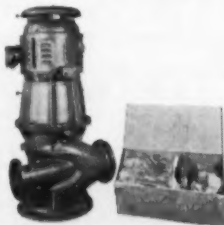
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NEW PUMPS



NEW LST BALLAST PUMPS

Vertical — all bronze, Gardner-Denver pump; 8" suction, 6" discharge; 1500 GPM; 56' head. Powered by 30 HP type DN Century motors; 230 volts DC. Frame 375-S. Full magnetic Cutler-Hammer controller, Bulletin 6942. Drip-proof, with push-button control, overload and low voltage protection. In original crates. Excellent for aux. circulating, ballast, booster, etc.



NEW LSM VERTICAL BALLAST PUMPS

All bronze centrifugal pump; 1500 GPM @ 56' head; 30 HP—1750 RPM. Flanged inlet 8"; flanged outlet 6". Powered by Westinghouse 30 HP 440/3/60 1750 RPM motor, marine-type drip-proof, complete with magnetic controller. Use for ballast or circulating.

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95" Model 420 Barnes deep hole drill, 2 spindle
180 ton No. 27 Williams and White bulldozer
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24" Cincinnati 4 spindle upright drill, spindle motor drive
No. 15 1/2" Foots Burt vertical hydraulic feed driver for a multiple head (2)
20" x 72" Landis type D heavy duty plain hydraulic cylindrical grinder
53" No. 24A Gardner vertical spindle horizontal disc grinder, 15 HP, multiple vee belt dr.
8" x 24" No. 35 Abrasive grinder
300 lb. No. 3C Chambersburg pneumatic forging hammer.
2B Nazel forging hammer
4" bar Universal "Tri-Way" horizontal boring, milling and drilling machine
30" x 30" x 8" Cincinnati Hypro two rail, one right hand side head, dial feed planer
600 ton No. 464 Toledo flared frame knuckle joint coining press
600 ton Elmas cast steel high speed downward acting hydraulic press
500 ton Baldwin Southwork high speed hydraulic vertical downward working press
800 ton Model 2E48-800 Hamilton straight side single crank air clutch press
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3—25 ton, 1—80 ton GE 42" ga.
1—18 ton, 1—30 ton Plymouth 34" ga.
1—45 & 25 ton GE Standard Gauge
3—25 ton Vulcan 30" ga.

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3—676 C.F.M.—Ing. Rand 40T 220/440
3—3170 C.F.M.—Ing. Rand PRE 2—500 HP

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1/2, 1 1/2 Buffalo Forge Ironworkers.
3' x 11" 3' x 13" Cinc. Bickford Super Service Radial Drills.
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6' x 12 ga. Wysong & Miles Bending Roll.

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MOTOR GENERATOR SETS

Qu.	K.W.	Make	R.P.M.	Volts	D.C.	Volts
3"	3500	Al.Ch.	514	350/700	13800/6900/	4160
1*	2500	Al.Ch.	720	600	4160/2400	
1	1250	G.E.	122/265	450	4160	
1	1250	Whse.	600	720	4000/2300	
1	1000	Whse.	125/250	720	4000/2300	
1	600	Whse.	125/250	1200	440	
1	500	Cr.Whl.	375/600	720	2300	
1	500	G.E.	280/300	900	2200	
1	500	Al.Ch.	250	600	2300	
1*	300	Al.Ch.	350/300	1200	2300	
3	300	Whse.	125/250	1200	4000/2300	
2	200	Whse.	125/250	1200	2300	
1	150	G.E.	250	1200	4000/2300	
1	150	Whse.	250	1200	2300/440	

* 3-units sets

Complete G.E. Outdoor Switchgear consisting of 7 watertight cubicles. (5) contain type AM, 1200 amps., 5-KV magnetic drawout 3-pole air circuit breakers, 100,000-KV int. cap. (2) contain metering equipment, batteries, etc. BARGAIN IF WE CAN SHIP DIRECT FROM PRESENT LOCATION.

DIRECT CURRENT MOTORS 220-Volt

Qu.	HP	Make	Type	F. Vent.	R.P.M.
1*	3000	G.E.	F. Vent.		250/300
1**	500	Whse.	F. Vent.		600
1**	800	Whse.	F. Vent.		143/168
1	700	Whse.	F. Vent.		300/700
1	600	Whse.	Mill-R.B.		110/220
2**	600	Al.Ch.	Mill		300/600
1	400	G.E.	Ped. Brg.		450
1	300	Whse.	Mill		300
2	275	Whse.	Mill-QM		425/850
1	188	G.E.	MPC		400
1	175	G.E.	CD-175-A		850/1025
1	125	G.E.	MPC		400
1	125	Whse.	SK-184		575/850
1	100	G.E.	CD-175		400/800
1	100	Rel.	461-T		1150/1500
1	80	El.Dy.	25-S		525/1050
1	80	Rel.	651-T		575/1150
1	50/60	Whse.	SK-131		500/1500
1	50	G.E.	Encl. F.C.		400/800
2	40/30	Whse.	T.E.F.C.		500/1500
**	300/600-Volt				
**	600-Volt				

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- 1—AUTOMATIC COOLING BED FOR BARS up to 2" dia., consists of run-in table, cascade section, shuffler bar section, runout table, with all electric, 200 ft. long.
- 1—28" x 40" HOT STRIP MILL, 2-high, reversing with 2500 HP D.C. motor, etc.
- 2—28" 3-HIGH ROLL STANDS with inlet, outlet and intermediate tables. Will produce 4" sq. billets from 8" sq. blooms in 6 passes, includes bloom shear.
- 1—28" REVERSING BREAKDOWN MILL.
- 1—23" x 42" x 80" HOT STRIP MILL, 4-high.
- 1—28" PINION STAND, 2-high, modern design.
- 1—18 x 22" COLD MILL 2-high.
- 1—12" x 12" COLD MILL, 50 HP motor.
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- 1—8" x 18" COLD MILL including uncoiler, recoiler and edging rolls.
- 1—10" ROD MILL.
- 1—9" BAR MILL, 3-high.
- 1—REEL, 11" face x 17 1/2" dia.
- 1—UNCOILER, drag type, 60" maximum width, for cold mill.
- 1—RECOILER for 60" wide strip.
- 1—1500 TON STEAM HYDRAULIC FORGING PRESS.

- 1—34" x 192" ROLL GRINDER
- 2—60-ton Treadwell HOT METAL TRANSFER CARR.
- 2—65-ton ELECTRIC MELTING FURNACE, TOP CHARGE, with all electrical and mechanical equipment including 15,000 KVA and 13,333 KVA transformers.
- 1—ROLLER LEVELLER McKay, rolls 60" face & 3 1/4" dia. with gear box and universal spindles.
- 1—STRETCHER LEVELER for sheets, 500,000 lb.
- 2—KANE & ROACH BAR AND ANGLE STRAIGHTENERS, Size 24, cap. 3" x 3" x 1/4" angles 3 1/2" channels and 2" bars.
- 1—STRAIGHTENER, MEDART No. 0 for rounds 1 1/4 x 1 1/2 dia.
- 1—STRAIGHTENER, MEDART No. 04A, for rounds 1 1/4 to 1" dia.
- 1—MORGAN FLYING SHEAR FOR BARS up to 1 1/2" square, moving at speeds up to 1800 FPM.
- 2—UNITED HOT BARS, 60", sliding frame.
- 1—UNITED 24 BAR SHEAR vertical open side.
- 1—150" x 1 1/2" SHEET SQUARING SHEAR.
- 1—SLITTING SHEAR FOR SHEET, Mesta 82".
- 1—HALDEN FLYING SHEAR LINE, capacity 38" wide x 20 to 34 gauge x 15" to 144" long.
- 1—OPEN HEARTH CHARGING MACHINE, 11' track gauge, 5 ton capacity, new 1953.

- 1—MORGAN INGOT STRIPPER CRANE, 50' span, 200 tons capacity, 230 volts D.C.
- 1—44" ROLL LATHE, enclosed headstock, tailstock, piano rest, 20 HP 500/1500 RPM 230 volts, D.C. meter and controls.
- 3—Blaw-Knox SLAG LADLE TRANSFER CARS.
- 1—MANIPULATOR, Brosius, 1 ton capacity.
- 1—WIRE DRAWING MACHINE, Aetna-Standard 18" block, 5-unit.
- 2—PICKLING MACHINES for sheets, Mesta.
- 2—50 - TON CAPACITY HOLDING FURNACES, electric, each with 7500 KVA transformer.
- 2—PACK FURNACES for hot sheet mills 62" x 50" double chamber.
- 2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.
- 1—3000 HP GEAR DRIVE, ratio 500 to 73.7 RPM.
- 1—3000 HP GEAR DRIVE, ratio 500 to 95.8 RPM.
- 1—1200 HP GEAR DRIVE, 358 to 94.6 RPM, 3.78 to 1 ratio.
- 2—25 HP SPEED REDUCERS, Falk 21 to 1.
- 1—3000 HP MOTOR, 11000 volts, 3 phase, 60 cycle, 814 RPM.
- 1—1200 HP MOTOR, 2200 volts, 3 phase, 60 cycle, 353 RPM.
- 1—50 HP MOTOR, G.E. frame MD-610-AE, 230 volts, 500 RPM.

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(2) Equal to new—manufactured by Allis-Chalmers. 1200 KW—525 volts D.C.—2290 amps—750 RPM—cooling self-ventilated—totally enclosed—separate excitation—continuous duty—class B insulation—mfg. type M.H.C.—frog leg armature.

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HP	Make	Type	Speed
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250	GE TEFCBB	K-4335	1800
180	GE TEFCBB-XP	K-4328	3450

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- DETROIT FURNACES—10 lb. to 3000 lb. Cap.

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- 1—3 KW AJAX, Lab Type
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- 1—50 KW AJAX 1000 amp. MG Set
- 1—100 KW Water Cooled—3000 Steel
- 2—150 KW AJAX WYATT—60 cycle, Brass
- 1—333 KW AJAX 1000 Steel

SPECIAL
500,000 lb. Tinius Olsen Hydraulic COMPRESSION TESTING MACHINE
24" Stroke—72" Specimen Length
LIKE NEW—Offered at a BARGAIN

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- 1—2' x 3' x 6' deep, TATE JONES, gas fired, 1800°F.
- 1—20" x 24" deep, L&N Homocarb electric
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- 1—50 KW WESTINGHOUSE Induction Heating Unit

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- 1—36" Continuous WHEELABRATOR, used 2 mo's.
- 1—27 x 36 WHEELABRATOR w/loader
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- 1—48 x 42 WHEELABRATOR w/loader
- 1—AMERICAN 48" Swing Table
- 1—PANGBORN 6' Table-Room, Type LK
- 1—PANGBORN TABLAST, 8' Table
- 10—S to 15 H Hevi-Duty, Double End Grinders
- LARGE STOCK OF DUST COLLECTORS

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THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

- No. 22—12" Heald Rotary, m.d.
- No. 25—A—24" Heald Rotary, m.d.
- No. 2 Brown & Sharpe, m.d.
- #300—60 Hanchett Vertical Spindle, m.d.
- 16" wide, 24" under wheel, 120" table
- Mattison, m.d.
- Model F, 6x10x18" Thompson Hydraulic Horizontal Wheel, m.d.
- Model 64A—61" Bridgeport Hydraulic Face, m.d.
- Schoenner Way Grinder, radiol arm
- 14"x16"x48" Thompson Type C Horizontal, m.d.

THREAD GRINDERS

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- No. 1 Heald Tool Sharpener, m.d.

- No. 2A Wm. Sellers Universal Tool Grinder, m.d.
- No. 2B Sellers Wet Drill Grinder, m.d.
- No. 4T Sellers Tool, m.d., latest
- No. 5T Sellers, m.d.
- No. 6G Sellers, m.d.
- No. 13 Gleason Cutter Sharpener, m.d., late
- Ingersoll Face Mill Grinder
- No. 13 Brown & Sharpe Universal, m.d.
- 12" Gleason Spiral Bevel, Gear Cutter Sharpener, m.d.
- No. 4—4 Barber-Colman Hob Sharpener, m.d.
- Sundstrand Tool Grinder, m.d.

UNIVERSAL GRINDERS

- 10x24" Landis Type C, m.d.
- 14"x48" Landis Type C, m.d.
- 14x36" Norton, m.d.
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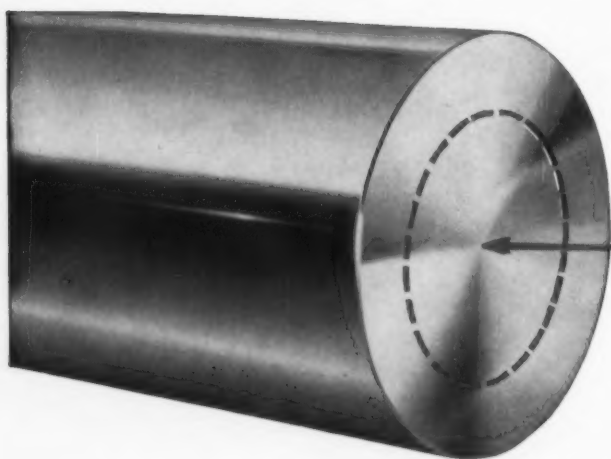
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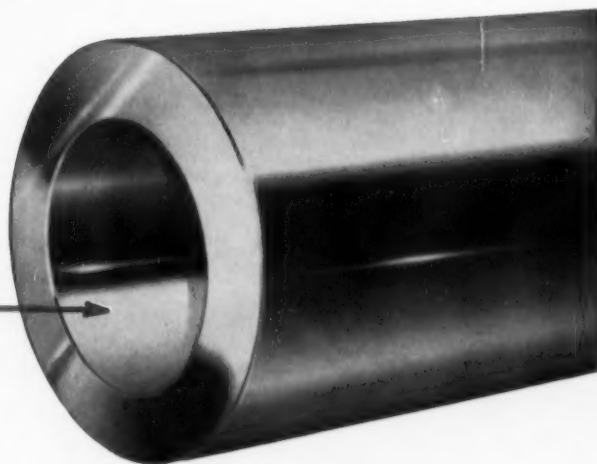
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Why bore this out...

*when you can get the
hole ready-made?*



Save money on hollow parts by switching from bar stock to TIMKEN® seamless steel tubing

Check these savings you get when you make hollow parts with Timken® seamless steel tubing instead of bar stock:

1. **NO HOLE TO DRILL**—it's already there.
2. **ELIMINATION OF COSTLY BORING OPERATION** frees part of your screw machines for other jobs—adds machining capacity *without* adding machines.

3. **MORE PARTS PER TON OF STEEL** because there's less metal to hog out.

And with Timken seamless steel tubing you get better quality finished products. The piercing operation by which Timken seamless steel tubing is made gives the tubing its fine forged quality. A solid round is forged over a mandrel, thoroughly working the metal inside and out. Accurate temperature and piercing speed control combine

to produce uniform, fine forged quality. And we maintain this quality from tube to tube, heat to heat, order to order.

Timken Company engineers are always ready to study your problems, recommend the most economical tube size for your hollow parts job—a size guaranteed to clean up to your dimensions. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN Fine Alloy STEEL

TRADE-MARK REG. U. S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING